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ENGINEERING NEWS-RECORD

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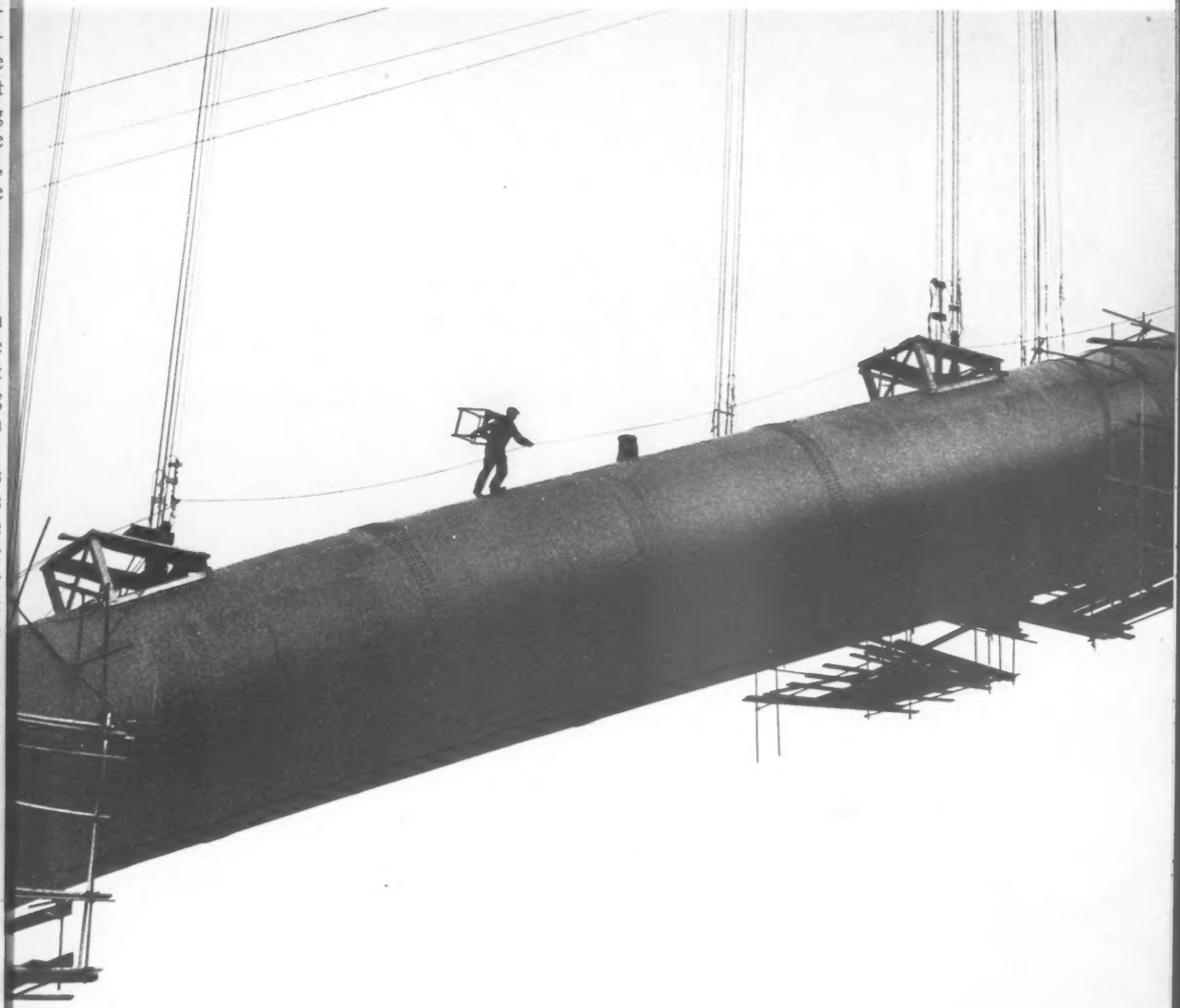

Tubular arch spans Swedish fiord p.24

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Armco MULTI-PLATE Pipes Installed in 1931 Still in Excellent Shape

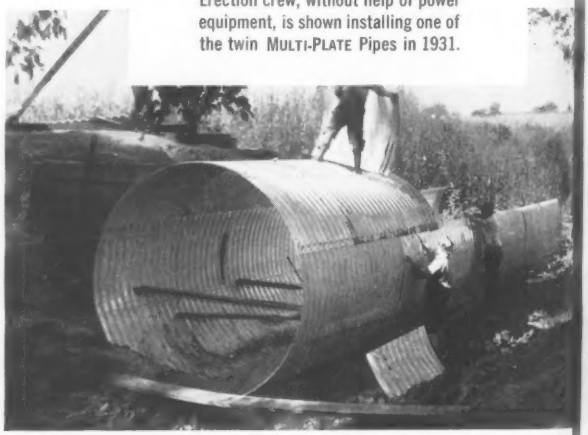
New steels are born at Armco

Here is the 29-year-old Armco MULTI-PLATE culvert as it looks today. Each pipe is 120 inches in diameter, 3 and 5 gage, and 40 feet long.

Twenty-nine years ago, in Sangamon County near Springfield, Illinois, a county highway crew installed a twin Armco MULTI-PLATE® Drainage Structure — one of the first — to replace an old, narrow bridge. Today, this culvert is still in excellent condition.

This is convincing evidence of durability. Long service life is one reason why engineers and contractors are using these corrugated metal drainage structures on many Interstate and other limited-access highways all over the country.

For dimensional and engineering information, write us for literature on Armco MULTI-PLATE Drainage Structures —or ask your local Armco Sales Engineer. Armco Drainage & Metal Products, Inc., 4800 Curtis St., Middletown, Ohio.



Erection crew, without help of power equipment, is shown installing one of the twin MULTI-PLATE Pipes in 1931.

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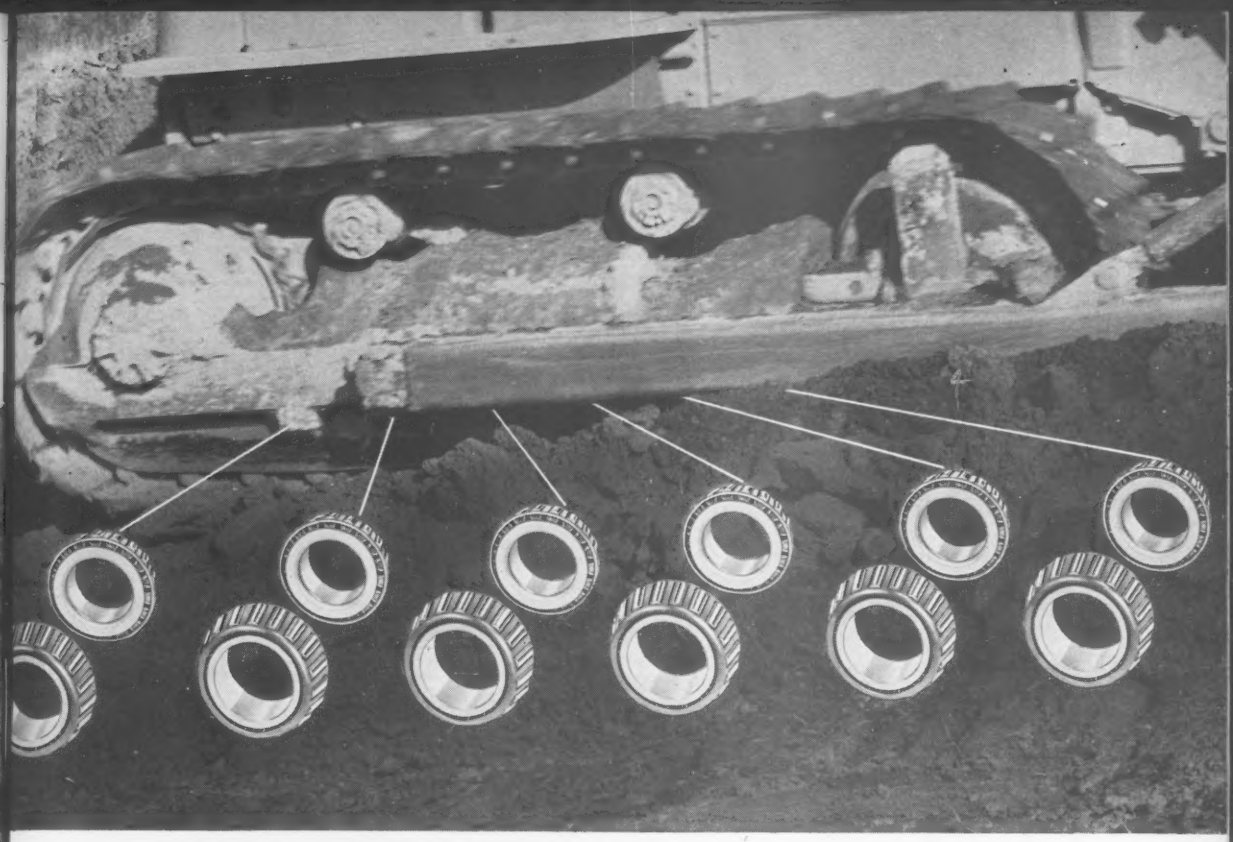

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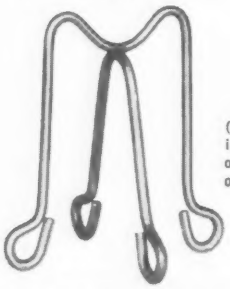

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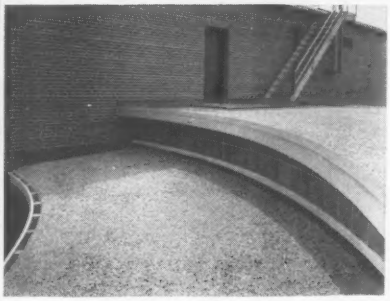

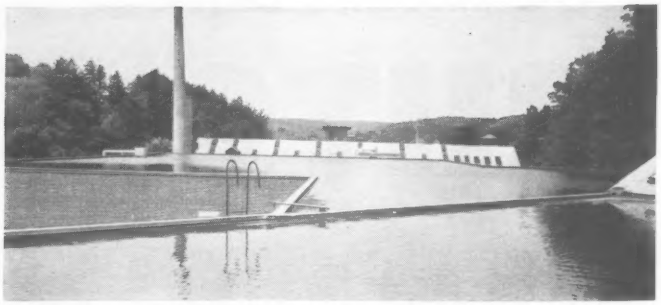

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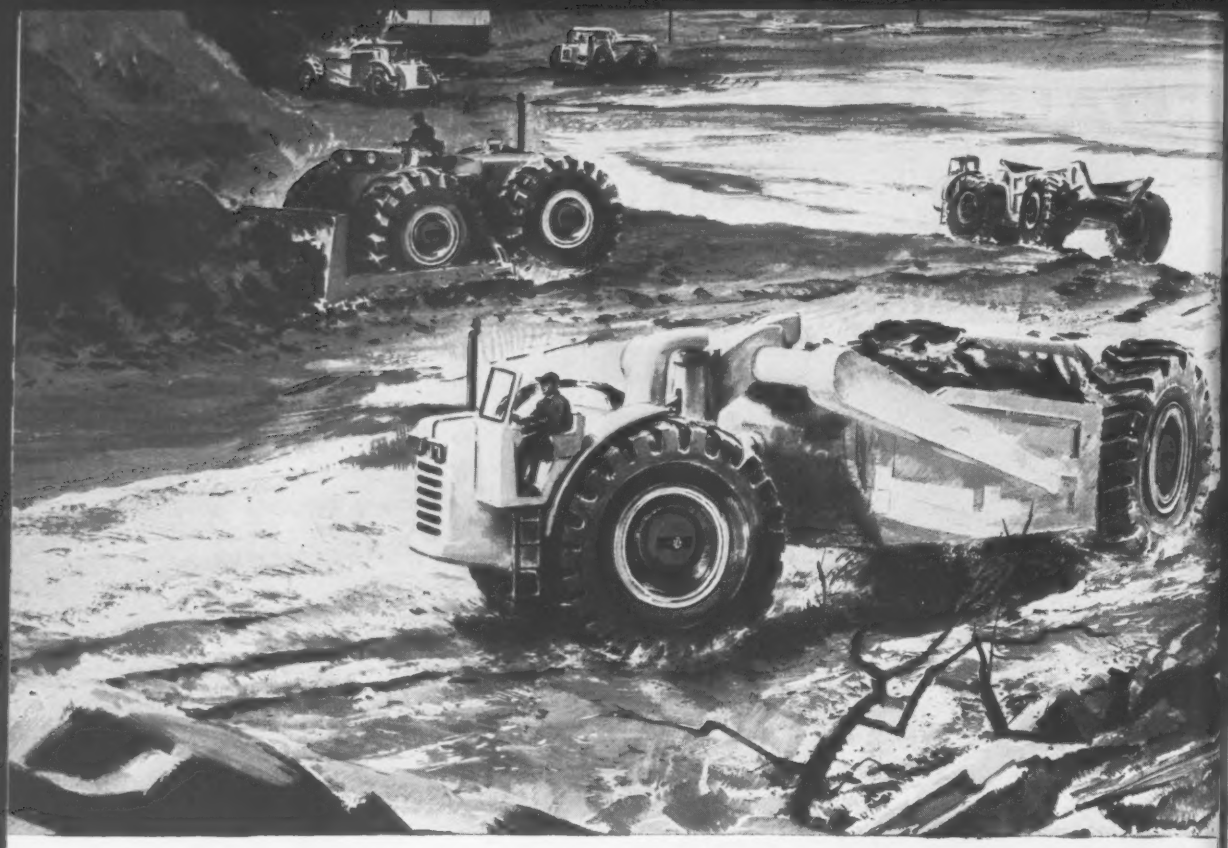

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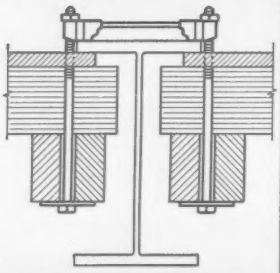
FOR STEEL BEAMS AND CONCRETE GIRDERS

ADJUSTS FROM TOP OF DECK



NEW

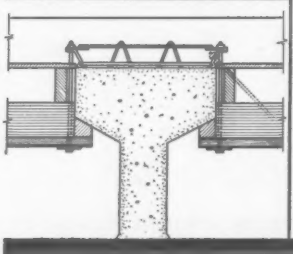
Pres-Steel Hanger

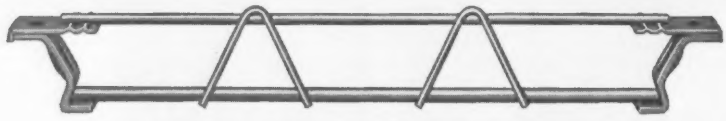
(Pat. pending)

This newly developed Pres-Steel Hanger combines the desirable features of conventional hangers, yet costs less! Assembly is simple, ½" Coil Bolts are passed up through the hanger—no threading is necessary—and a square coil nut is applied. All adjustment is made conveniently from the top of the deck. The foot of the hanger has a saw tooth edge which bites into the flange upon application of a load, preventing any movement of the hanger. The flat top provides even bearing for the nut and the bolt hole is so formed that there is no binding of the bolt on removal. Pres-Steel Hangers are also made to take the bolt or coil rod at 45°.

These economical hangers have a safe working load on steel beams of 8,000 lbs. (ultimate capacity 14,500 lbs.). On concrete girders the safe working load is 6,000 lbs. (ultimate capacity 9,000 lbs.).

ADJUSTS FROM TOP OF DECK





Prescon Hanger

This unique hanger provides hanging points cantilevered away from the concrete girder sides. The forms are hung from coil bolts threaded into heavy square coil nuts bearing on the top plate. Provision is also made for haunch forming above the girder. Adjustment is made conveniently from the TOP of deck. Simultaneous overhanging slab or curb forming is accomplished with coil rod and wing nut at 45°. Available in two types—6M (6,000 lb. safe working load) and 10M (10,000 lb. safe working load). The use of Prescon Hangers on concrete girders eliminates hazardous, makeshift methods.

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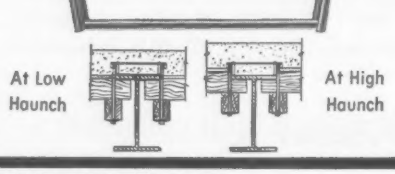
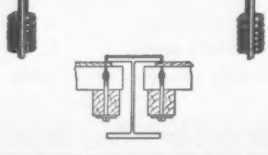
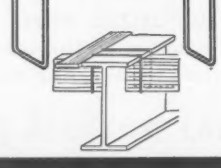


Coil Beam Saddle



Wire Beam Saddle



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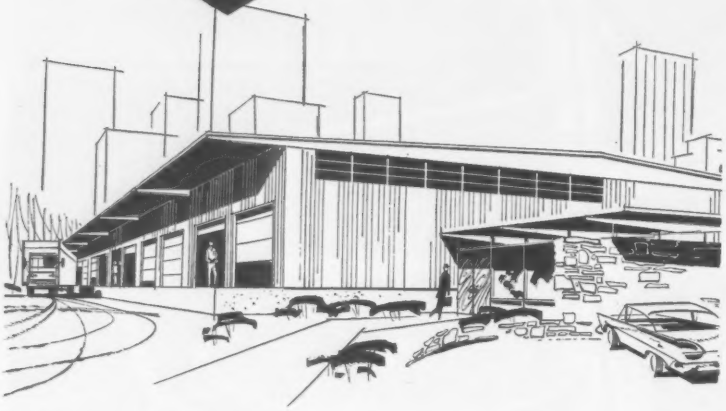

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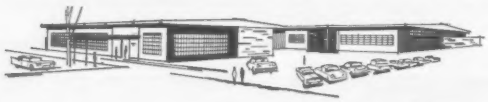

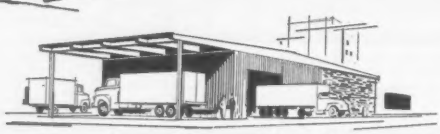

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Reader Comment

Public Education Needed To Produce Good Codes

SIR—Mr. Kalve's letter on "outdated engineers" has prodded me to make the following comments.

While I agree with his basic context, I must take exception to his last paragraph, "The outdated category of engineers together with the outdated building codes and regulations, I think, cast the blackest shadow in the entire profession of civil engineering."

While every profession has its "old fogies", the men who today are classified in the outdated category are the men who have tested, studied and worked out many of the modern concepts we use so commonly today. I know many older engineers who are as up to date as the newest graduate. And with their years of experience, they work all the harder for the field of civil engineering.

Mr. Kalve's comment on building codes reveals a common feeling of the American public that the engineer writes the code and makes it law. Engineers may have a large part in writing the code, but the document is made into law only by the action of the legislative body of the municipality. In this stage, changes take place in the proposed code. Through public indifference, legislative action, special pressure groups and a general desire to make things more restrictive on the next guy, the code changes to a form sometimes altogether different, or it may even remain the way it has been for the past 20 years.

Proper codes are the same as proper laws. They come about only if interested citizens avoid the "let George do it" philosophy.

The answer is public education. It is here that the civil engineer may do even more good than by writing codes and reports. Manufacturers, builders, building product salesmen, architects, building officials and engineers will all have to combine forces to present to the public the advantages of new products and new methods. When such an education program occurs, better building codes will become more commonplace.

STANLEY DOLECKI
Director of Public Works
Ferguson, Mo.

(*Reader Comment continued p. 12*)

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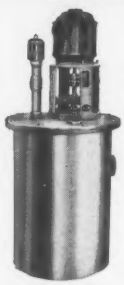
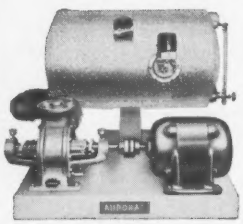


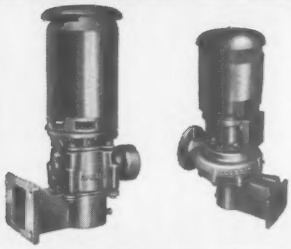
Vertical Unit

For high capacities with special conditions . . . packing box only . . . ideal for applications where return is extremely low or below floor level . . . available as either simplex or duplex units. Capacities to 100,000 EDR—pressures to 60 PSI.



APCO
Horizontal Unit

Steel or cast iron receivers . . . turbine type pumps with vertical centerline discharge will not vapor lock . . . high efficiency . . . packing box standard . . . mechanical seals optional . . . available as either simplex or duplex units. Capacities to 100,000 EDR to 115 PSI.



Type BJF and BCF
Flange Mounted

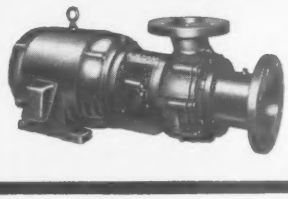
Especially applicable for OEM Equipment . . . Vertical mounting close-coupled design for maximum compactness . . . minimized space requirements . . . simplified, low suction mounting . . . optional discharge arrangements . . . low NPSH. Capacities to 1800 GPM and heads to 320 feet.

Type BP
Packaged CENTRI-PAC

22 packaged sizes . . . stainless steel seals for maximum corrosion resistance . . . stainless steel motor shaft . . . cast bronze impeller . . . self-venting with vertical discharge . . . low NPSH. Capacities to 450 GPM and heads to 140 feet.

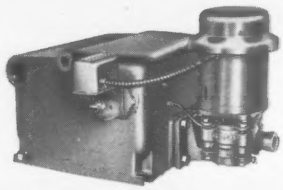
Model V-4
Close-Coupled Pumps

Maximum simplicity . . . single stage . . . mechanical seals . . . optional self-priming feature. Capacities to 30 GPM . . . Heads to 350 feet.



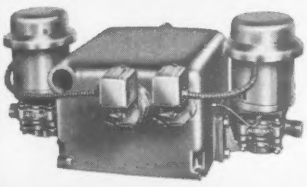
Type BCH
Close-Coupled End-Suction

With self-venting vertical discharge . . . interchangeable mechanical seal or packing inserts . . . low NPSH . . . unique suction spool arrangement. Capacities to 1800 GPM and heads to 320 feet—also available with flexible coupled drive.



Type CP
Cond-A-Pac Unit

Utmost compactness . . . cast iron receiver . . . mechanical seals . . . close-coupled . . . low return . . . complete unit ready for installation of lead lines. Capacities to 15,000 EDR—20 PSI. Also available as Type AR with APCO Turbine Type pumps—capacities to 10,000 EDR—pressures to 80 PSI.



Type C
Heavy Duty Unit

For high capacity or heavy duty applications . . . broad flexibility . . . cast iron receiver . . . low return . . . mechanical seals standard . . . packing boxes on pumps optional when desired. Capacities to 150,000 EDR—pressures to 125 PSI.

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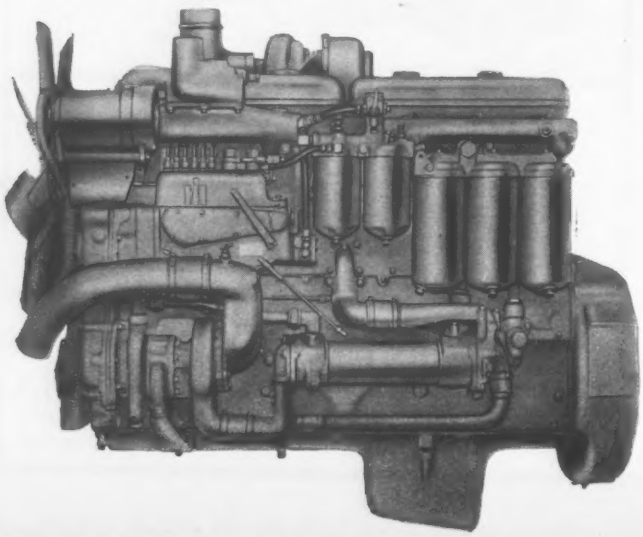
Payscraper power-to-payload punch tops all other rubber-tired rigs—because the fast-slugging, high-torque International DT-817 diesel is the Payscraper power plant! The 375-hp, turbocharged DT-817 gives you direct, push-button starting; all-altitude high-efficiency performance; power for top rim-pull to help speed all steps of the cycle; time-saving "no-lag" control power!



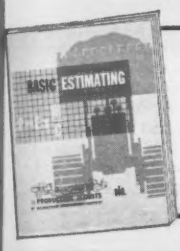
. . . roading

. . . dirt-on-fill capacity!

Even "dead" sand comes alive and "boils" fast into the Payscraper bowl. Every detail of Payscraper design aims at speeding the cycle, and *staying available!* The 21-inch diameter steel cross tube provides super load-bearing strength and resistance to impact. Bowl "backbone," draft arms and side reinforcing members all are massive high-strength box-section steel weldments. "X"-member reinforcing maintains perfect push-frame alignment at all times. And the 4-speed, planetary-type, torque-converter power-shift transmission automatically adjusts torque and load to speed — to maintain full capacity!

You steer the 140,000-lb. loaded Payscraper almost as easily as a 3,600-lb. automobile! Payscraper gives the big control advantages of (1) exclusive International rack-and-pinion plus tandem pump steering system; and (2) 3-degree forward spindle pitch that improves scraper balance and prevents "nose downs" in high-speed turns. The 16-adjustment, bump-smothering seat builds operator confidence, too. And reach-easy power brakes, "control tower" vision, and flush deck safety help him deliver full Payscraper capacity, and take advantage of speeds up to 33.5 mph. He commands ample power and traction to pull *directly* out of 90-degree turns, even on soft fills!

The fast, positive-acting Payscraper ejector mechanism is powered by the International PTO-driven Cable Control Unit. One cable drum of this simple planetary system actuates the apron and ejector; the other drum positions the bowl to control spreading action. Apron lifts to a big 94-inch opening. Two ejector-plate pushing members apply dozer-like action to force out the whole 34-cu. yd. load cleanly. Action of six heavy-duty springs, stretched during ejection, positively powers the ejection mechanism's return!



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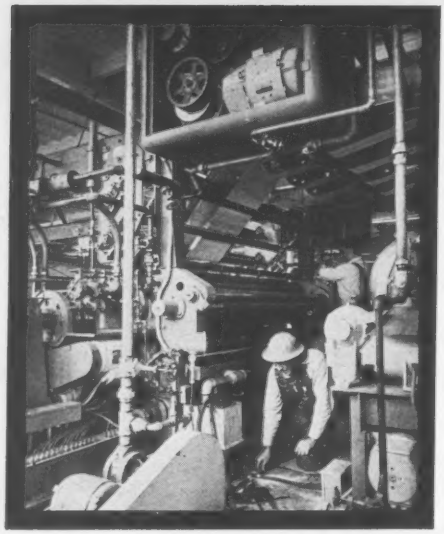

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. . . Reader Comment

Three Zeros Too Many

SIR—I read with interest the article "High Earth Dam Plugs Narrow Canyon for Power" (ENR Apr 7, p 44). The storage capacity you credited to the five reservoirs in the Big Creek system is somewhat generous. According to the "Register of Dams in the United States," T. W. Mermel, 1958, it would be more like 537 thousand acre-feet rather than 537 million acre-feet.

E. R. PETERSON
Engineering Adviser, Canadian Section, International Joint Commission
Ottawa, Canada

SIR—Though California is a big state and likes to do things on the grand scale, I believe there must be a slight error in the Mammoth Pool Dam article.

You say the Big Creek development has "five reservoirs with a storage capacity of 537 million acre-feet." This would mean that the average reservoir in this group would have a storage capacity of 107 million acre-feet or two million more than the planned storage capacity of the High Aswan Dam in Egypt, or that one of these reservoirs of average size would have almost as much storage capacity as all of the main stem dams on the Missouri River.

Someone must have misplaced a decimal point.

JAMES H. DENNIS
Office of Engineering Technician
Oahe Dam and Reservoir Project
Pierre, S. D.

Editor's Note: Three decimal places to be exact. The figure should be 537,000, as suggested by Mr. Peterson.

Lump-Sum Contracts

SIR—Mr. Volpe's advocacy of lump-sum contracts (ENR Mar. 31, p. 100) may not be intended to favor the contractor, but if successful, will almost certainly result in increased costs. The contingency item added to bids when the responsibility for determining quantities is placed on the contractor will usually exceed the cost of inspection. Furthermore, it is impossible, or at least very difficult, to exclude from bidding on public works any contractor who can furnish bond. Not all contractors are as quality-minded as Mr. Volpe. Hence, inspection is essential.

Perhaps the greatest danger in lump-sum contracts is the absence of any contractual agreement on unit prices for the variations in quantities which frequently result from information obtained after the job is under way. Negotiated prices for these extras are almost invariably higher than the prices for the same items in a unit-price bid.

As to the manpower for computing the quantities, this must be applied in any case to prepare a cost estimate.

RALPH BIRCHARD
Chief, Construction Department
Rader & Associates
Miami, Fla.

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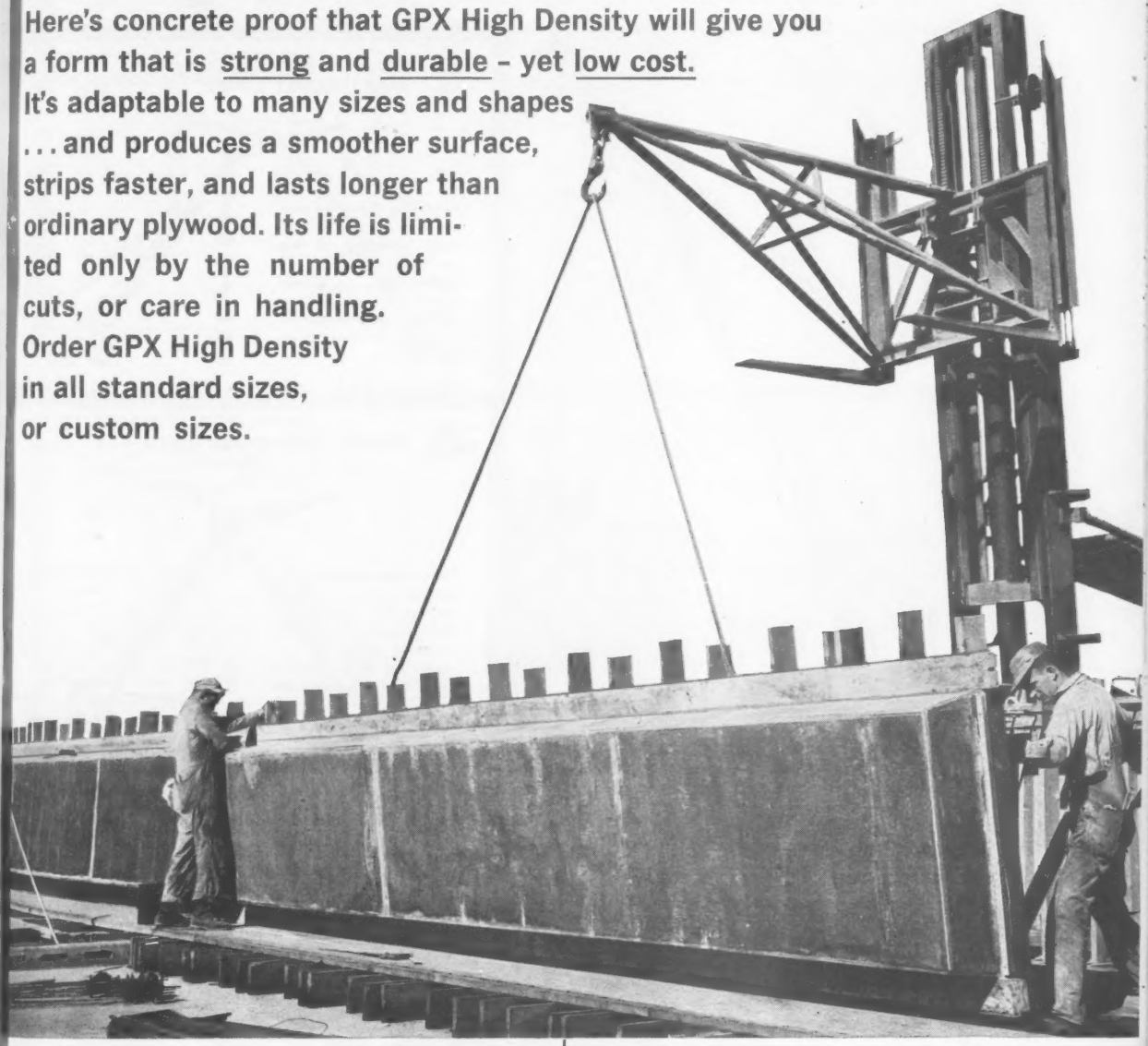

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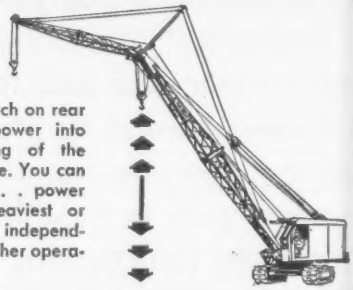
Only with LINK-BELT SPEEDER Full-Function Design...

perform up to 6 operations

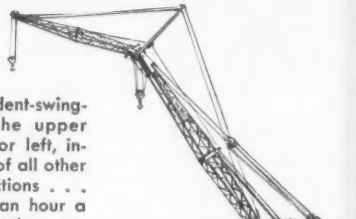
simultaneously or in

1 POWER UP OR DOWN MAIN LOAD LINE

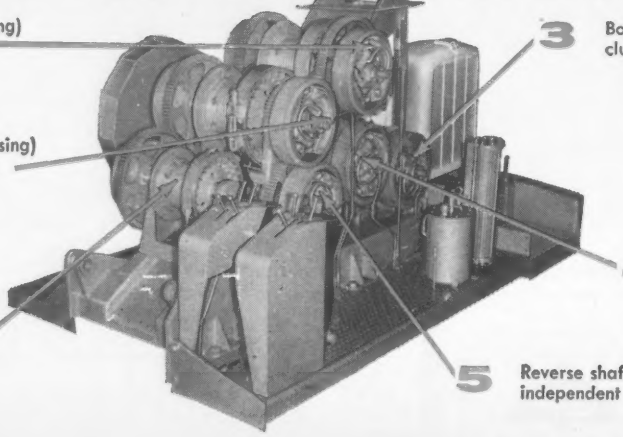


Reversing clutch on rear drum puts power into load lowering of the main hoist line. You can power up . . . power down the heaviest or lightest loads independently of all other operations.

4 SWING RIGHT OR LEFT



With independent-swing-and-travel, the upper swings right or left, independently of all other machine functions . . . saves up to an hour a day by eliminating costly shifting time.



1 Load lowering (reversing) clutch for rear drum

2 Load lowering (reversing) clutch for front drum

3 Boom lowering clutch

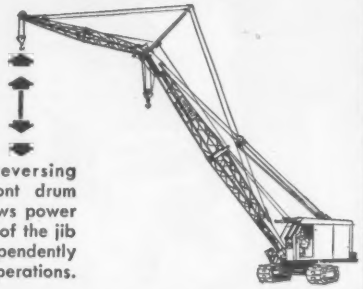
4 Reverse shaft for independent swing

5 Reverse shaft for independent travel

6 Independent third drum

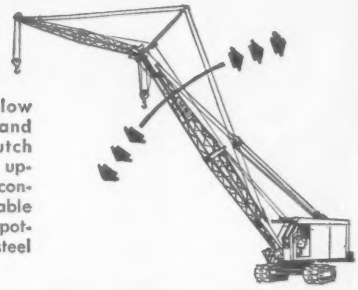
r independently!

2 **POWER UP OR DOWN SECONDARY LOAD LINE**



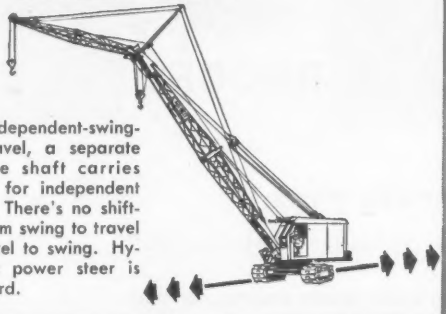
Exclusive: a reversing clutch for front drum also . . . allows power load lowering of the jib whip line independently of all other operations.

3 **HOIST OR LOWER BOOM UNDER POWER**



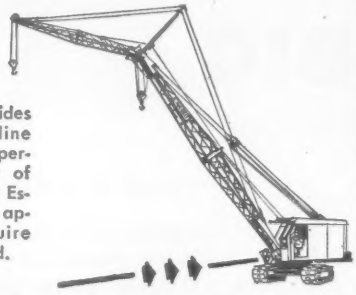
Independent high-low speed boomhoist and boom lowering clutch provide fast, safe up-and-down booming control. Especially valuable for high-accuracy spotting jobs such as steel erecting.

5 **TRAVEL FORWARD OR BACKWARD**



With independent-swing-and-travel, a separate reverse shaft carries power for independent travel. There's no shifting from swing to travel or travel to swing. Hydraulic power steer is standard.

6 **OPERATE INDEPENDENT THIRD DRUM**



A third drum provides one more load line which, again, is operated independently of all other functions. Especially useful for applications that require "snaking" in a load.

Link-Belt Speeder's years-ahead Full-Function Design is standard on all models up through the 40-ton "108" Series. Because of this exclusive design concept, your operator can have completely independent control of *all* lifting or excavating applications. He can power individual load lines up or down, crowd or retract, swing and travel, boom up or down — all individually, or in any combination, depending on the job.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

MONEY EASES—Offers to sell government-backed home mortgages to the Federal National Mortgage Association (Fannie Mae) declined nearly 10% in the first quarter. J. Stanley Baughman, president, says this indicates the cost of money is easing, which in turn will spur housing construction (see also p. 24).

COMPETITION WORSENS—The price index for BPR's composite mile of highway construction dropped 2.7% to 159.9 for the first quarter of '60. The new index is 6.3% below the record high of late 1957, and lowest since first quarter of '56.

NEW GOVERNMENT: MORE AID?—Downfall of the Syngman Rhee government in Korea may mean additional construction funds for that country under the U.S. foreign aid program. Funds for Korea had been cut 60% in fiscal 1960. Far Eastern experts now believe the U.S. must contribute more money.

PUBLIC WORKS "STOCKPILE"—Gov. Nelson A. Rockefeller of New York has signed legislation that will allow the state to "utilize public construction more effectively as an economic stabilizer." The idea is to stockpile certain planned projects for use only when "pockets of recession" bring unemployment (ENR Jan. 7, p. 84).

EXPECT TOUGH SPECS—Preparing to award a contract for the unusual concrete-framed bus station it has commissioned Pier Luigi Nervi to design, the Port of New York Authority is conducting a special study of the quality of concrete it will have to specify. The Nervi design uses precast elements in a bold arrangement (ENR Mar. 24, p. 70).

ON AGAIN—Alwac International, Inc., a Swedish firm, may receive a $3.5-million contract for installation of that one-mile monorail in Seattle, as a result of a recommendation by the Century 21 Corp. Contract is scheduled for award by June 1. The Seattle Transit System will operate the line.

BIGGEST A-POWER PLANT—A 360,000-kw atomic power plant, biggest in the U.S., may be put under construction next year by Southern California Edison Co. Westinghouse Electric Corp. would design and build the pressurized-water reactor. Bechtel Corp. would be the engineer-constructor. The project would cost $70 million and take four years to complete.

BIGGEST COMPUTER?—There's an electronic computer available now that can perform 100 billion calculations in a day. Some of the things it's adept at doing: forecasting weather on a world-wide, long-range basis; solving space problems. Prices for the new IBM-built machines start at $10 million.

"FOSTER Lightweight Piling is stronger, costs less, handles easier . . . PLUS"

When you use Foster Lightweight Piling you get really lower costs—*plus* the safety and versatility of high-strength steel sheeting.

For shoring trenches, protecting shorelines, or for any light-load protection, Foster Lightweight Piling is easy to use. It's designed for manual handling, requires no special crane or rig, and can be driven by a small air or steam hammer. An exclusive "non-jam" interlock permits simple folding together of two sections, yet Foster Lightweight Piling comes apart easily. Unlike wood sheeting, can be used over and over.

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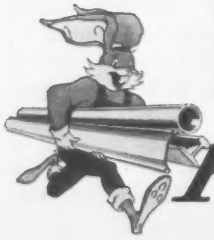

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WASHINGTON OBSERVER

- **Politics shape highway hearings**
- **Politics push reclamation project**
- **New Mexicans take over public works**

● **Politics showed itself as the number one influence on the highway hearings that opened Monday.** No sooner had the first witness taken the stand than the Republicans began defending against the Democrats.

The Democrats on Representative Blatnik's subcommittee began methodically building their case in an attempt to show loose supervision over spending of the federal funds being parceled by state officials for highway construction.

The Republican strategy is to place the primary responsibility for claimed malpractice and corruption on state politicians and highway officials.

The Republicans forced Roy E. Biffle, Oklahoma highway engineer, to admit he had reported irregularities to his boss, but did nothing more in order to hold his job.

Democrats are hammering away to show that officials of the Bureau of Public Roads took the state highway department's word that all was well in Oklahoma, despite newspaper accounts and complaints from county officials that offered evidence to the contrary.

There's no doubt that this week's hearings are only the beginning of a series of highway investigations that will continue through the next Congress—and probably beyond that. But for now, at least, politics shape the hearings.

—

● **California's $290-million San Luis reclamation project seems certain to be approved by Congress this year** now that the House Rules Committee reversed itself to let the House vote on the measure. The Senate has already approved an authorization bill similar to the House version.

There are Presidential politics involved. Vice President Nixon wants the authorization approved before the real campaigning starts—and it's interesting to note that all the Republicans on the Rules Committee this time voted to let the measure out of committee.

—

● **Two Senate committees that have most to say about federal public works will be headed by New Mexicans next year.**

Senator Clinton Anderson, now chairman of the Joint Committee on Atomic Energy, will become chairman of the Interior Committee, since veteran Sen. James Murray of Montana has decided not to run for re-election this fall.

Senator Dennis Chavez will continue as head of Public Works, as he has since 1949—Except for the two years the Republicans were a majority of the Senate. Because of the way Senators' terms rotate, it's impossible for Republicans to win the Senate this fall.

The Interior Committee has Bureau of Reclamation projects and the Interior power agencies, National Park Service, and the like. Public Works is responsible for highways, river basins, federal buildings, rivers and harbors and flood control.

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Demand Pushing: Awards Jumping

Booming demand for new heavy construction has jerked the slack out of the market.

April contract awards jumped to a weekly pace exceeding all other months in history except December, 1950, which had a billion dollars worth of federal atomic energy plant construction.

As contractors' new business poured in last month at an average of more than $500 million per week, the 1960 total pulled quickly ahead of last year. The margin of increase jumped from a meager 1% for the first quarter to a 10% gain as of this week.

Awards to date are second only to the 1956 record for the period—and the gap is closing.

During the balance of 1960, heavy construction awards should move up fast, surpass 1956's all-time high and rack up a gain of at least 7% over 1959 as ENR has forecast (ENR Jan. 28, p. 21).

Actually, the 1960 boom in awards is likely to turn in an increase over last year greater than 7%. This is because the heavy construction market is becoming much stronger on nearly all major fronts: highways, bridges, industrial building, housing, commercial building, public nonresidential building, pipelines and waterworks.

The new strength in some of these types of construction is confirmed in sharply increasing contracts during recent weeks.

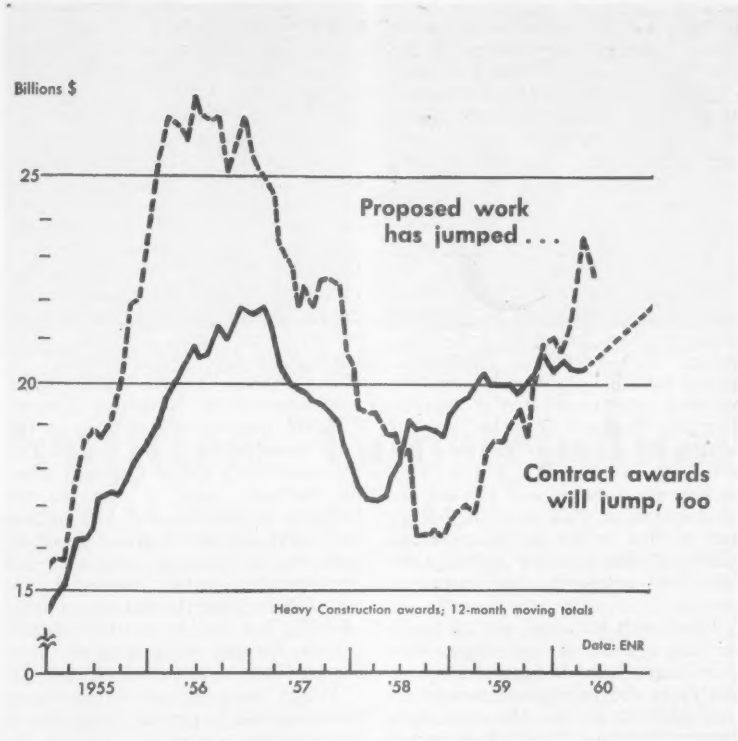
Bridge awards, sparked by large contracts for New York City's Verrazzano-Narrows Bridge and by the sharp rebound in federal-aid contracting, are now 62% ahead of the first 18 weeks of '59.

Highway awards, after lagging behind early in the year, have expanded their lead over '59 from a 3% rise at the end of March to 6% this month—with much bigger month-to-month and year-to-year gains to come.

Waterworks, also trailing last year with a first quarter decline of 32%, are now 7% ahead of last year. The upturn in proposed waterworks construction in the second half of '59 indicates that awards will continue to lead '59 during the balance of '60.

Other types of work that are running above last year: Pipeline awards, which have already exceeded last year's 12-month total in the first three months (ENR Apr. 21, p. 21); private mass housing, which is reacting to an unexpected welling up of mortgage funds and a boom in apartment construction (ENR Apr. 21, p. 135). Housing awards have soared 44% above last year and 58% over 1958 for an 18-week total that's the third highest on record. Only the 1955 and 1956 mass housing boom tops this year's rate.

By contrast, a look at the scorecard shows industrial building off 5%, public nonresidential building down 11% commercial building barely holding even, public housing down 22% and earthwork-dams-waterways off 18% from last year's contract totals. But these comparisons don't all represent the most probable trend for these types of work in 1960. Their chief shortcoming is that they don't reflect what's happening on the drawing boards—the key to future contract volume. Moreover, the cumulative comparisons obscure very recent but rather definite shifts in commercial and public nonresidential building.



The chart above is packed with promise for forward-looking construction men. It shows the strongest surge of new plans going on the drawing boards since the 1955 buildup for the 1955-56 contract boom. In fact, the climb in proposed work in the last seven months or so lifts the current 12-month total close to the 1955 peak.

Meanwhile, although contracts are moving up slowly, the contract uptrend should accelerate sharply through the rest of this year as the bulge in proposed work clears the planning stage and moves to construction contract.

Three major heavy construction markets can be counted on for much more work in the months ahead than their low volume of awards earlier this year indicates: commercial building; public nonresidential building; and industrial building. In all three cases, the buildup of proposed work is just now or about to bring a marked increase in contract awards.

Commercial building is on the rise.

(Turn the page)

April awards climbed to a weekly pace of about $50 million, the heftiest volume reported by ENR since last July. The timing of this increase indicates that it signals the end of a nine-month slide related to the steel strike. This is because new projects—office buildings, shopping centers and private institutional buildings—have been proposed in increasing volume for over a year.

The rise in proposed commercial building, gradual in '59, stepped up in '60. And it should set off an increasing rate of awards during the rest of the year. While the total to date is running a slight 3% behind 1959, contractors should wind up the year with about 15% more commercial building contract volume than last year, as ENR forecast in January.

Contractors looking for new public nonresidential building to bid on were disappointed early this year. The trend in available new work continued to run downhill, mirroring a sharp reduction in new buildings going on the drawing boards way back during the 1957-58 recession. But while the contractors' market was falling apart in '59 and '60, proposed jobs turned in the opposite direction. Proposed public building has been on the upgrade ever since the end of the 1957-58 recession. But the long lag between planning start and bid call on this type of work held off the impact of this upturn in plans on bid calls until the past few weeks when contractors welcomed a big increase in awards.

The March and April rate of public building awards looks a lot bigger than it is because new business was off so sharply in the December-February period—much lower than the usual slackening at that time of year. But the new uptrend in public building awards should carry much higher in the months ahead if it is to fully reflect the rapid climb in new proposed work.

Public building awards are likely to turn the tables on ENR's forecast for '60. Instead of the predicted 17% decline, awards this year may well come close to matching last year's near-record $2.6 billion reported by ENR.

Industrial building contractors noticed their new business perking up in April, following a dismal month of March. Last month's moderate recovery could be the forerunner of the pronounced upswing in new plant awards that's expected to materialize by June as the increased volume of jobs on the drawing boards moves ahead to construction contact (ENR Apr. 14, p. 21).

Sewerage construction awards to date trail '59 by a slim 9% margin. But here again the climb in new proposed projects since the end of the 1957-58 recession points to a new high in 1960 contracts. The fact that large sewerage projects are proposed in a lump but go to contract in sections obscures the relationship between the proposed work and contract award trends, makes it difficult to spot turning points. At the same time, however, there is a clear-cut uptrend in contracts now in its third year. And with proposed work also on the rise, a contract downturn is very unlikely this year or next.

Three major heavy construction markets remain relatively weak: earthwork-dams-waterways, public housing and military construction.

Dam construction contracts are running far below their peak rate of 1957 through early '59, when huge projects like the New York State Power Authority's Niagara development and the U.S. Bureau of Reclamation's Glen Canyon Dam fed hundreds of millions of new business to contractors. However, this year's total for earthwork-dams-waterways should compare more favorably with 1959's total than the 11% drop to date. A big factor in the future growth of this construction market in the Sixties is whether California voters approve a proposed $1.75-billion water resource development bond issue at the November election.

Public housing will perk up in the next three months as the Defense Department lets a raft of Capehart housing contracts, many of them to run between $5 million and $10 million each. But Capehart housing passed its peak in '58. Though municipal and state-sponsored public housing is running 6% ahead of the first four months of 1959, but the decline in Capehart military housing will pull public housing for 1960 short of 1957, '58 and '59.

While booming missile base construction awards provide a big lift to the military construction market, declines in other military construction cut the over-all amount of new defense business available to contractors. This shows up mainly in military airport construction awards, down more than 40%.

By contrast, county and municipal airport contracts are running close to last year's pace. But even if this year's civil airport total breaks the 1959 record, it's unlikely to offset the decline in military work which contributes the bulk of airport construction contracts.

The Far West has a huge 323% jump in awards this year, mainly due to the $250-million Callan Park development in Daly City, Calif., announced last month by Callan Construction Co., Colma, Calif. (Awards are up 8% excluding the Callan Park project.)

Other regional gains show up in the Midwest +22%, and Middle Atlantic, +9%. The Mississippi to the Rockies is holding about even, while New England is off 6%. But the South's volume is sagging 18%.

M-C&S Chief Wolfson bemoans— years of low profits in construction.

M-C&S Loo

Merritt-Chapman & Scott Corp. of New York City, one of the nation's biggest and oldest construction contractors, currently has a severe case of business indigestion.

Louis E. Wolfson, 48-year-old chairman, with Robert E. Harvey, president, both have reached publicly for the bicarbonate of soda.

Announcement that this diversified corporation, which had gross revenues last year of $427.5 million and net after taxes of $9 million, was in pain came last week at the annual meeting of stockholders.

A day later, the company announced the retirement of 59-year-old William Denny, executive vice president in charge of construction. Mr. Denny had been with the company 32 years. He is succeeded by Myles C. McGough, formerly a vice president, who joined M-C&S in 1936 as a project engineer.

Heaviest blame for the company's troubles is placed on the construction department, which last year brought in $190 million—nearly 45%—of M-C&S's total revenues.

But the business results of this year's first quarter and the outlook for the remainder of 1960 look bleak.

Mr. Harvey said the company netted $222,000 in this year's first three months. This compares to net earnings of $1,958,000 of last year. The "disappointing" first quarter is "primarily due to a loss by the construction department," Mr. Harvey explained.

President Robert E. Harvey says— the M-C&S department is losing in '60.

Executive Vice President Denny— retires as boss of construction department.

Myles C. McGough takes over— as new executive vice president.

&S Looks at Its 'Profitless' Construction

And such was the state of mind of Mr. Wolfson, that in extemporaneous statements to his stockholders, he threatened to dispose of the construction department. "Construction: That's the cancer here, and if we can't correct it, we'll get rid of it."

But then Mr. Wolfson reversed his field. "If construction does well, we will expand the department, and I hope it does."

More generally he said, "If we have to get rid of division heads—or even divisions—we will." But his view of the construction operation was most bitter when he complained that if the company were dependent only on construction, "You people would have no dividends, no stock and no company. Nothing, because that's exactly the earnings of the construction division over the last 11 years: Nothing."

Top officers, who are also close associates of Mr. Wolfson, have told ENR since the stockholders' meeting that the chairman's actions would not be as drastic as his statements. And Mr. Harvey, pointing out that construction had made money in the past, said Mr. Wolfson obviously meant that if M-C&S had been dependent on construction alone, it would not have net worth of $143 million.

However, they leave no doubt that the construction operations will be given a thorough overhaul: Bidding will not be aimed at getting a job at any price; great emphasis will be placed on obtaining a much larger volume of negotiated work on a cost-plus-fixed-fee basis; over-all, construction will be made to average out to a 10 to 12% return on investment after taxes.

In line with a policy of not bidding merely to keep plant and equipment busy, the company is currently disposing of surplus equipment not required for continued operations. M-C&S owns equipment having a replacement value of $75 million.

Biggest current problems of the department are four of its largest jobs chopping simultaneously at M-C&S profits. The contracts are: Glen Canyon Dam on the Colorado River in Arizona, $108 million; Gorge High Dam on the Skagit River near Seattle, $14.7 million; the main generating plant for the Niagara Power Project at Niagara Falls, $99 million; and intake structures and section of twin conduits, also at the Niagara job, $66 million.

The Glen Canyon project, awarded in 1957, was shut down by a labor dispute in the final six months of last year. In the first week of January work resumed under an agreement giving workers an extra 50 cents an hour, a boost the company calls a wage increase. The Bureau of Reclamation, however, refuses to pick up 85% of the increase under a contractual escalation clause. The bureau and the General Accounting Office say the payment is a subsistance allowance "under the guise of an increase in wage rates" (ENR Apr. 14, p. 174). M-C&S is still pressing the claim.

Gorge High Dam, awarded in 1956, is running much above the $14.7-million contract price. The company filed suit against the owner, Seattle, claiming $6.9 million for extras and change orders, and asking $2.4 million in damages. Merritt-Chapman also asked for cancellation of the contract. Last December the suit was dismissed by a federal court (ENR Jan. 14, p. 29). The company has appealed.

The two Niagara contracts won in 1958 now are failing to generate profits. Changes in plans and specifications after work was started and "unanticipated conditions" encountered during the job are the reasons given by Mr. Harvey. The company has entered claims for the costs and additional claims are planned, officials say.

Despite the reversals, and in line with the drive to obtain negotiated contracts, M-C&S will not back off from its proposal for the Chesapeake Bay bridge-tunnel crossing. M-C&S is one of four contractors in a joint venture holding a letter of intent from the Chesapeake Bay Ferry Commission for construction of the $144-million project. A contract is contingent on sale of a $210-million bond issue. It was withdrawn from the market late last year because of money market conditions. Now, financial underwriters are considering offering the bonds again in July.

Big Housing Battle Shapes Up

- **Congress wants federal money or credit to stimulate homebuilding. House passes billion-dollar bill to provide it.**
- **FHA Commissioner calls lower down payments all the stimulant needed. President waits with his veto for House bill.**

The battle lines between Congress and President Eisenhower were sharply defined this week over the issue of applying greater government stimulation to homebuilding.

Both branches of government are moving in this direction now. But they are in striking disagreement over the best methods of accomplishing the goal.

The issue was joined last week:

• On Thursday, a strong lineup of northern and southern Democrats overwhelmed GOP opposition in the House of Representatives to pass a bill giving Fannie Mae authority to purchase an additional $1 billion of mortgages in the low-priced class of $13,000 or less.

• On Friday morning, FHA announced it was lowering down-payment requirements for FHA-insured mortgages on the middle-priced homes of $13,500 to $25,000.

On mortgages of $13,500 and $14,000, the difference in the down payments is negligible. For $15,000 mortgages, the down payment was lowered $50; for $16,000, it is $100 less; for $17,000, $300 less; and for homes from $18,000 to $25,000, it is $500 less.

Democrats claim their measure is needed to offset the Administration's tight money policies and pour additional funds into the homebuilding market. They say their measure would accomplish this by having the government pick up $1 billion in mortgages from the secondary market, thus freeing these funds for re-lending.

Republicans were quick to challenge the idea that tight money was still blocking an expansion of homebuilding. FHA Commissioner Julian H. Zimmerman announced at a hastily called press conference that his agency had detected a growing trend to easier mortgage money conditions since February.

Mr. Zimmerman says his economic experts had suspected an easing in the money markets in February and March and that this is borne out by a special mid-April survey made among local FHA offices around the country.

Secondary market prices of FHA-insured 5¾% new-home mortgages with 25-year maturities were selling at $96.8 on the hundred in mid-April compared with $96.3 as of the first of February.

In addition, he says, the survey "suggests an easing" of money conditions in the conventional mortgage field. Interest rates on conventional mortgages have been running about 6.3% the last several months, but FHA feels this may be the peak and rates will start tailing off.

"Builders in the last few weeks have indicated that money conditions have become easier than a few months earlier," Mr. Zimmerman says. He looks for further definite signs of easing in another four to six weeks.

He feels that the combination of greater mortgage money availability and lower down payments will provide all the necessary stimulus needed for homebuilding.

The root difference between Democrats and Republicans is their assessment of the state of the homebuilding economy. Democrats contend that the drop-off in the rate of homebuilding this year is serious and that strong corrective measures are needed to prevent a further slump.

New homes put into construction last year totaled 1.3 million. Latest government forecasts predict 1.2 million homes this year. But in March, the homebuilding industry was operating at a rate that would produce 1.1 million homes this year.

Commissioner Zimmerman, however, is sticking by his forecast that 1.2 million new homes will be built. He says further he never thought that a decline of 100,000 homes from a record 1.3 million is any big source of worry.

The Administration's satisfaction about the homebuilding outlook makes it virtually certain that President Eisenhower would veto any such bill as that passed by House Democrats last week.

The measure now goes to the Senate where the chances of passage are considered good.

Honolulu Gets an Air Terminal

Construction has begun on several phases of Honolulu's $23-million International Airport terminal. Completion is scheduled for mid-1961.

A $6.3 million terminal building contract was awarded jointly to the Nordic Construction Co. of Honolulu and Robert E. McKee, General Contractor, Inc., of Dallas, Texas. Main building (model photograph above) is an 11-story structure, topped by the control tower.

Other major cost items include $2.5 million for new taxiways, and $1.5 million for grading of the terminal area.

A major difference between Honolulu International and most major airports is the elimination of special take-off and landing spots and "fingers" assigned to each airline. Instead, the only distinction in the runway and passenger service facilities will be made between domestic and foreign airlines. This layout was dictated partly by a scarcity of land. But it will save space and add to passenger convenience, according to designer Theodore A. Vierra, Honolulu architect.

Phillips Petroleum Wins NSPE Development Award

Phillips Petroleum Co., Bartlesville, Okla., will be the first winner of the Industrial Professional Development Award, established by the National Society of Professional Engineers to encourage better engineering employment practices by industry. The award will be presented at NSPE's annual meeting in Boston, June 1-8.

Here's what Phillips does for its engineers:

- It encourages active membership in engineering societies.
- It grants time off to attend technical meetings and to take registration examinations.
- It urges the writing and presentation of technical papers.
- It holds numerous technical meetings at company expense and on company time.
- It pays the cost of engineering registration seals and renewal fees.
- It makes every effort to place engineers on technical and administrative work, and gives them assistants to perform non-technical routine duties.
- It rules out the use of engineering titles for non-technical or subprofessional jobs by providing specific job descriptions and job titles for all engineering positions.

Operating under these rules, Phillips had a turnover rate in 1959 among its scientists and engineers of 5.2%.

Architects Review Plans For Golden Gateway Job

Eight developers, each eager to build San Francisco's Golden Gateway Redevelopment Project, presented their programs to an architectural board for examination last week.

The panel, retained by the San Francisco Redevelopment Agency, presents an imposing list of who's who in architecture and development work. The seven members:

- Mario J. Ciampi, San Francisco architect, presiding.
- Lawrence B. Anderson, head of the Department of Architecture, School of Architecture and Planning, Massachusetts Institute of Technology.
- Louis I. Kahn, Philadelphia architect and redevelopment consultant.
- Morris Ketchum, Jr., New York City architect.
- Ferd Kramer, Chicago mortgage broker and real estate developer.
- Minoru Yamasaki, Birmingham, Mich., architect.
- Henry S. Churchill, Philadelphia architect.

The panel will report to the agency by June. The report will not be binding but will carry considerable weight.

Ball Park Seats on Tracks . . .

. . . Will Roll to Side of Gridiron

New York City is moving ahead with construction plans for a $15-million, third-league baseball stadium (ENR Oct. 29, 1959, p. 27). And when the project is completed in 1962, it will have stands that move.

Preliminary plans approved by the city last week include provisions for 10,000 seats on rolling stands. They will move from the first and third base lines to positions on opposite sides of a football gridiron, converting the stadium's field seasonally from diamond to gridiron. Portable bleacher seats would be erected at each end of the gridiron to enclose it at first tier level.

A clear view of the field—no columns in the way—will go with every one of the 55,000 seats. Praeger-Kavanagh-Waterbury, New York City engineers-architects, are designing the three-tier stadium with its upper tiers cantilevering out 30 and 46 ft from the main steel framing.

The movable stands of the first tier will go up as 12 independent sections, six on each side of home plate. At the rear, each section will sit with flanged wheels on a curved track. Intermediate and front supports will rest on foundation pedestals. To move a section, groundkeepers will jack up the front, raising it off its pedestals, slip a multi-wheel dolly under the front support and draw the section to its alternate position.

In the future, the open end of the stadium could be closed in with seat tiers, making it a complete circle. There's provision in the design for a movable roof after that.

The job should go out for bids this fall, with construction scheduled to start by January.

Cold Maine winter didn't stop foundation or road construction in the Navy's . . .

Rush to Complete Polaris Radio Station

When Polaris-missile-equipped submarines begin to roam the oceans in the not too distant future they will get orders from the rockbound coast of Maine, where the Navy is rushing with all possible speed to complete what will be the most powerful radio station in the world.

For the second consecutive winter, the construction forces of a large number of contractors have braved cold and snow to keep the $70-million job on schedule.

The Naval Radio Transmitting Station, as it is called, will be of the VLF (very low frequency) type whose impulse signals follow the earth's surface and thus can be picked up under water. The station occupies a 2,800-acre peninsula in Washington County, Me., up near famous Passamaquoddy Bay. Ideal for its intended purpose, the site, however, has presented construction difficulties.

Peat bogs alternated with exposed ledge rock, and where the rock was below the surface the overburden was usually a saturated blue clay. Most of the area was also forest covered, so extensive clearing and grubbing were required.

Most of the operational facilities—the antenna arrays, VLF transmitter building and a shipping pier and warehouses—are located toward the outer end of the peninsula. The administrative center and station housing are about 3 miles farther back along the highway. There is also a conventional high frequency radio installation.

Most spectacular of the facilities will be the two antenna arrays required for the VLF system. Each consists of a central tower 980 ft high, an inner ring of six 875-ft towers and an outer ring of six 800-ft towers. The two arrays are about a mile apart, and each covers an area of about 120 acres. Notable also is the fact that about 2,200 miles of copper cable had to be buried as a part of the antenna system.

The station has also required the building of 12 miles of roads and the construction of special buildings for the power plant and the transmission equipment. The VLF transmitter building had to be completely shielded and grounded against radio frequency waves (ENR Apr. 2, 1959, p. 34).

The pictures above show work carried on this past winter by the Franchi Construction Co., West Newton, Mass., contractor for some of the buildings, in the administration area, the high frequency transmitter building and a mile long road connecting the two. In the view at the left concrete for administration area building foundations is being placed in an excavation that had been protected from freezing by calcium chloride and hay. Polyethylene tents in the background cover other newly placed concrete.

In the right view grubbing and grading of hard-to-handle blue clay on a road right-of-way goes ahead regardless of weather.

Pilots: Stop, Look and Listen!

When the main runway at Akron Municipal Airport is lengthened as planned, it will cross tracks of the Baltimore & Ohio Railroad at grade level.

Akron will add 1,800 ft to the 5,700-ft northeast-southwest runway to adapt it to turbo-prop planes. The 1,500-ft extension on the south end will intersect with a 60-ft-wide right-of-way on which the B&O has a single-track spur (ENR Mar. 10, p. 17).

The track serves the Goodyear Aircraft Corp. plants adjacent to the airport. Some city officials proposed a tunnel under the runway comparable to highway tunnels that go under runways at Seattle-Tacoma Airport and at Los Angeles. But a grade crossing was selected.

"Only two freight trains a day use the spur and the control tower could easily handle this situation," says Airport Manager B. E. Fulton.

The city hasn't asked the Federal Aviation Agency for funds for the improvement work. FAA officials weren't expected to endorse a runway that intersects with a boxcar route.

Commercial airliners haven't used Akron Municipal Airport since 1948, when they moved to Akron-Canton Airport, about 12 miles southwest. The 34-year-old municipal airport is used mainly by private planes, aircraft that carry business executives about the country. The four major rubber companies in Akron own or lease hangar space there.

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Around the Country . . .

• **Dodgers award stadium contract**—Latest in the saga of Chavez Ravine, site of the L. A. Dodgers' future home, is the contract award for the stadium construction to Vinnell Constructors of Los Angeles. Vinnell has been grading the site since last fall (ENR Sept. 24, 1959, p. 30). Construction will begin after the city approves a tract map and the Dodgers acquire title to the site. Cost of the 56,000-seat stadium is estimated at $11 million. Design is by Praeger-Kavanagh-Waterbury, New York.

• **Suffering in comfort**—More than 150 contractors attended a recent Virginia Department of Highways bid opening without leaving their hotel rooms. A closed circuit broadcast of the opening was brought to the hotel on a leased wire and piped into the rooms. Those who felt like taking to their beds had only to walk across the room.

• **Dry town vetoes water bonds**—Following voter defeat of a $1.6-million water bond referendum, the city of Pacifica, Calif., has declared a moratorium on construction due to a shortage of drinking water. With several sections of town completely out of water during peak hours, the district water board is considering doubling the water rates to raise funds.

• **Niagara crossing**—The Niagara Falls Bridge Commission has filed for permission to build a four-lane, 980-ft highway bridge over the Niagara River five miles below the falls. It would link Canada's Queen Elizabeth Way with the New York Thruway near Lewiston, N. Y. The bridge, to cost about $12 million, would be 304 ft above water level.

• **Houston mall**—A $12-million air-conditioned shopping mall is under construction in Houston. Sharpstown Center will sprawl over a 70-acre tract and have 760,000 sq ft of store and mall space. Sidney H. Morris and Associates, Chicago, is the architect. Frank W. Sharp, Houston, is the developer.

• **Eastern expands**—Eastern Air Lines will build a $12-million maintenance and overhaul base at Miami International Airport. Two major buildings will house repair and maintenance shops for jet and jet-prop engines only.

• **Death takes a holiday**—More than 120 million miles were logged on the Kentucky Turnpike last year without a single fatality. The safety record is attributed to intensive police patrolling, public awareness of electric timing devices, prompt removal of snow and stiff penalties for speeding convictions.

• **Freezing in Florida**—The Interior Department's second direct-freeze pilot desalter will be located in St. Petersburg, Fla. Blaw-Knox Co., Pittsburgh, is building the 35,000-gpd sea water conversion facility under a $141,430 contract.

• **Slipcover for a bridge**—Steel trusses will replace New Jersey's last covered bridge—the 88-year-old Green Sergeant's Bridge in Hunterdon County—this summer, but they will be discreetly veiled. Wooden walls and a shingle roof will fit over the new span like a tea cozy to mollify tradition-minded residents of the area. Builders hope to get most of the wood for the disguise from the remains of the razed bridge.

• **Tall tower for prairie**—Construction of Kansas' tallest building, a $9.5-million, 19-story structure, will get under way in Wichita within two months. Wichita Plaza will contain a motel, a 425-car parking garage, and office space. Dallas architect Walter W. Ahlschlager, is the designer.

• **Richmond's biggest**—A forthcoming $10-million plant in Richmond, Va., will represent that city's biggest industrial outlay in several years. Federal Paper Board Co., Inc., Bogota, N. J., will build the plant for a subsidiary, Manchester Board and Paper Co.

• **Philadelphia marine terminals**—Philadelphia officials have marked two 100-acre sites on the Delaware river for multimillion-dollar general cargo marine terminals, following construction of a $15-million terminal on a nearby 65-acre site.

• **High finance for middle incomes**—Governor Rockefeller last week signed a bill creating a New York State Housing Finance Agency with authority to issue $500 million in bonds to finance middle-income housing. Loans to private builders should spur housing construction.

Astronomer Urges That U.S. Build Huge Radio Telescope

Construction of a gigantic radio telescope, featuring a parabolic reflector nearly ½ mi in diameter, was proposed last week by Otto Struve, director of the National Radio Astronomy Observatory. The world-renowned astronomer estimated the cost at $100 million.

Major construction problem in building such an enormous dish is limiting fabrication and erection tolerances and deflections. Extreme rigidity and precision are required to obtain accurate focus of the radio waves from outer space.

One proposal for a stable foundation for the radio telescope is a hemispherical pit to be lined with rails on which the antenna frame would roll.

The world's largest radio telescope, presently under construction by the U. S. Navy at Sugar Grove, W. Va. (ENR Apr. 21, p. 17) has a 600-ft dia reflector.

Job Begins in New Orleans For Largest Skyscraper

Demolition to clear the site for New Orleans' largest office building began last month. The $8.5-million, steel-framed structure will provide 420,000 sq ft of floor space in its 28 floors. Completion is scheduled for late 1961.

Foundations will be 60-ton cast-in-place piles, driven 85 ft below ground level. Floors will be cellular steel deck with lightweight concrete topping.

Architect is Shaw Metz & Associates of Chicago; structural engineer, A. W. Thompson & Associates of New Orleans. Crane Construction Co. of Chicago is general contractor. Foundation subcontractor is Keller Construction Co., New Orleans.

Commercial Developments Add to Birmingham Boom

Construction plans for Birmingham, Ala., could bring the city its biggest commercial development in 30 years.

Now under construction:

• Southside Apartments, a 14-story building with an adjoining three-story parking garage. Architect is Pearson, Tittle, & Narrows from Montgomery, Ala., general contractor, Jehle Bros. Construction Co., Montgomery.

• Guest House Motel, a 120-unit building designed by Birmingham architectural firm Warren, Knight & Davis. Birmingham contractor Daniel Construction Co. of Alabama is the builder.

Planned for the future:

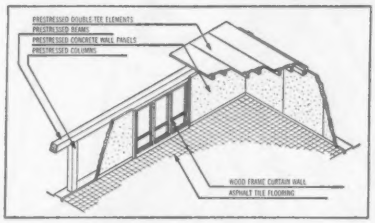
• University Towers, a $2.5-million, 14-story medical office building.

• A multi-story parking garage with 600 to 800-parking capacity.

Architects

Architects and Engineers: Reid Rockwell Banwell and Tarics, San Francisco; *Prestressed Concrete Fabricator:* Basalt Rock Co., Napa, California.

PRESTRESSED CONCRETE CALIFORNIA SCHOOL QUALIFIES FOR STATE AID



...BROUGHT IN AT $30,000 UNDER ALLOWABLE BUDGET

This is the Mango Avenue Intermediate School, Sunnyvale, California. It has met the requirements for low-budget schools as determined by the Department of Finance, State of California. Heretofore, 90% of the schools that have met this requirement were constructed mainly of wood.

Simplification of the structural elements helped, in large measure, to bring this structure within the requirements for state aid. Basically, the structural elements consist of prestressed concrete beams, columns, wall panels and double-tee roof sections (see isometric detail above).

At the moment, the school is equipped to handle some 660 7th and 8th grade pupils. Provision has been made to expand the plant to accommodate the 9th grade, bringing the total population to approximately 1000 pupils.

Here, briefly, are some of the client's instructions that were met by choosing prestressed concrete: Comply with state aid limitations; allow for future expansion; provide for low maintenance.

The benefits brought to this structure by prestressed concrete can be applied to almost any kind of structure you can name. This includes garages, motels, office buildings, piers, bridges, plants and warehouses. For other purposes, "State Aid" can be translated into low-cost initial investment, a characteristic of prestressed concrete for *any* structure.

Roebling has played a significant role in the development and promotion of prestressed concrete; in the manufacture of the finest wire and prestressing strand available and in the compilation of data on design methods and tensioning techniques. We will be happy to share this experience and information with you. May we suggest that you contact the prestressed concrete fabricator in your area or write Roebling's Construction Materials Division, Trenton 2, New Jersey.

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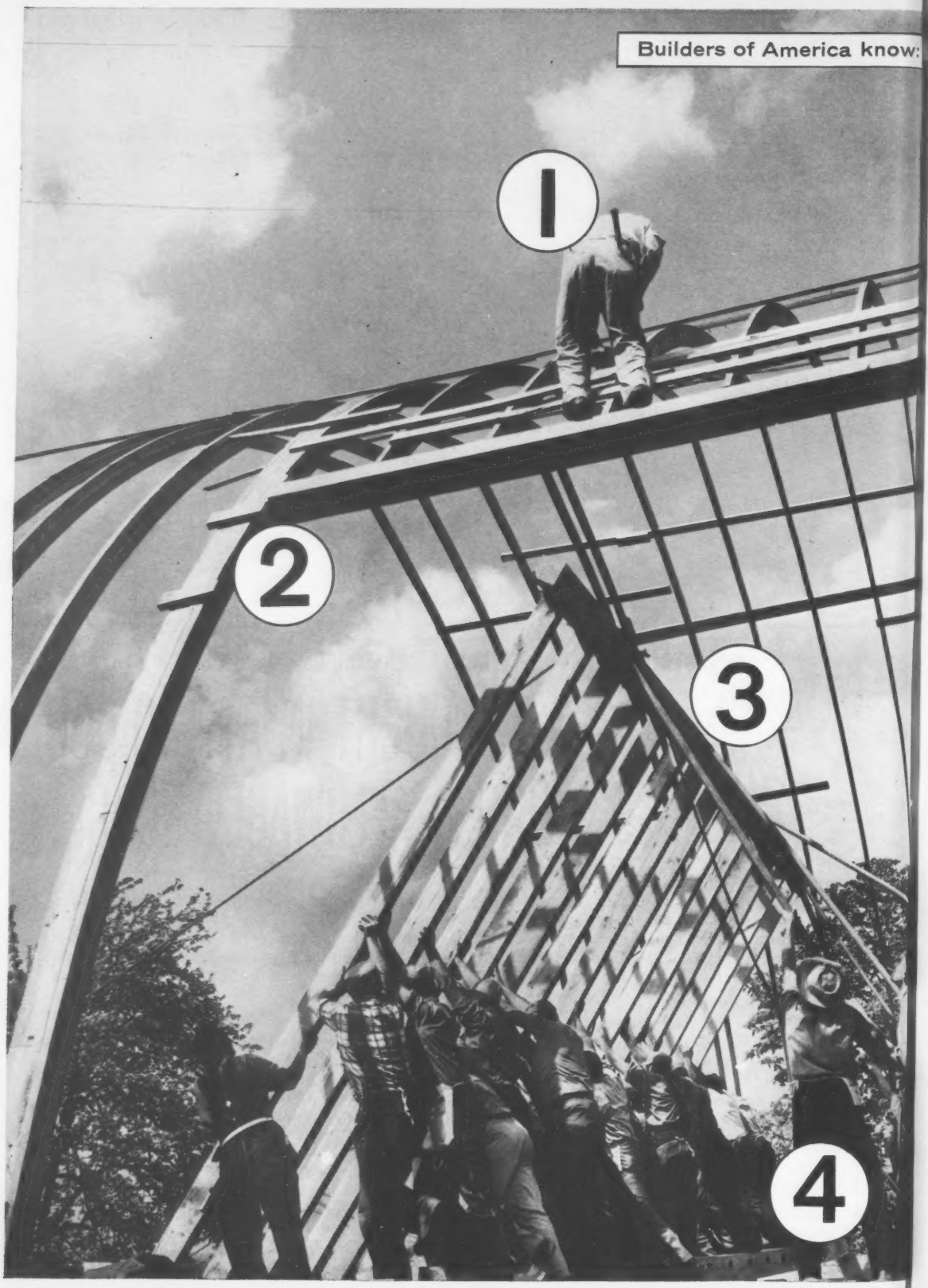
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3. Sill of endwall kicks out
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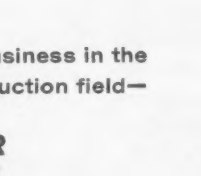

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Exit Bragdon

White House post vacated as General moves to CAB

General John S. Bragdon's dual White House job as coordinator of public works planning and analyst-adviser on highways is being quietly liquidated. This confirms the feeling among staff chiefs in the Corps of Engineers, the Reclamation Bureau, the Public Buildings Service and other agencies, that the coordinator's office was a temporary creation likely to expire when President Eisenhower leaves office.

President Eisenhower last week nominated his special assistant to fill an eight-month unexpired term on the Civil Aeronautics Board. Senate confirmation is regarded as certain.

Appointment to the $22,500 post on the five-member board provides a graceful exit for the President's West Point classmate. General Bragdon has served on the White House staff since 1954, first as consultant to the Council of Economic Advisers, and since 1955 as special assistant in charge of the President's public works planning effort. For three years prior to that date the retired Corps of Engineers officer was a vice president of Vermilya-Brown Co. of New York City (ENR Aug. 21, 1958, p. 21).

General Bragdon's last major assignment from the President, an over-all study and report on the federal-aid highway program, is now nearing completion. An interim report early this year caused some consternation among federal officials and congressmen by recommending cutdowns on approved mileage, standards and plans, particularly for urban areas.

At a special White House meeting recently, the President and some of his responsible officials discussed with General Bragdon the tenor of the findings and recommendations to appear in the final report. The recommendations found little favor with them.

As a result the report is being heavily discounted in White House circles. It is doubtful now that the President will ever release it. Commerce Secretary Frederick H. Mueller repudiated the recommendations for the Administration in a letter last month to Rep. Gordon H. Scherer of Ohio, ranking Republican on the House roads subcommittee.

As an out for General Bragdon, the President is moving him to the CAB. His small staff will continue to function in the public works planning office until the end of the year. Most of the staff will then presumably return to the federal agencies from which they came or will be offered equivalent positions in other branches.

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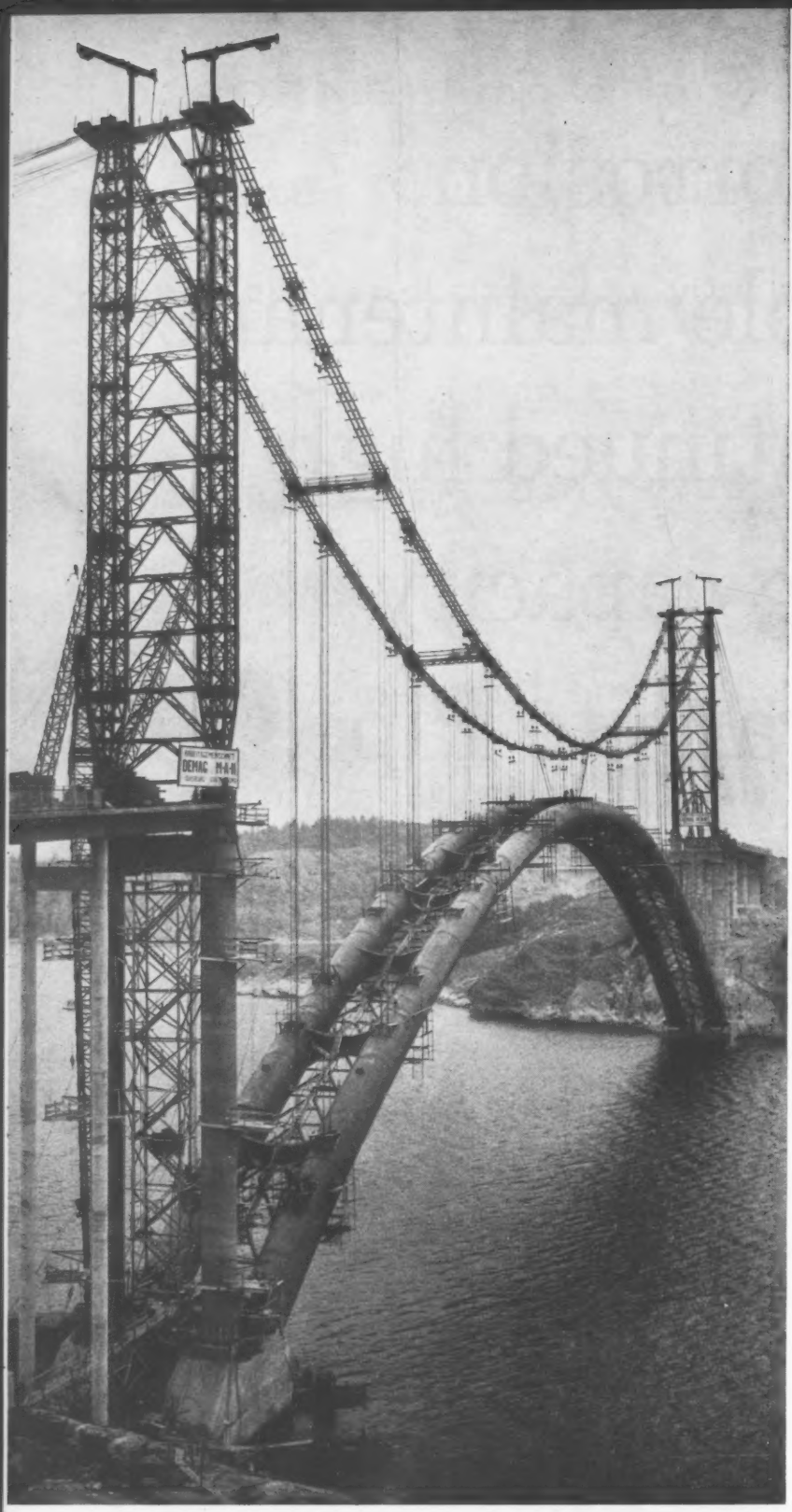

Temporary towers support cables used in erecting 912-ft arch.

Tube-Arc

A year ahead of schedule, contractors are putting the finishing touches on one of the world's unique bridges—a 912-ft twin steel tube arch over Askero Fjord on the west coast of Sweden.

Engineers chose the tube arch design because of the necessity for no-pier construction with clearance of more than 130 ft over a busy shipping channel. The water is deep; steep, rocky slopes border the fjord; and wind velocity frequently reaches 90 mph. Aerodynamic stability was of primary concern, since the bridge is extremely narrow—32 ft—for its length.

Tube sections making up each of the arches are about 12 ft 6 in. in diameter, and very thin-wall thickness ranges from about $\frac{1}{2}$ in. at the center of the arch to $\frac{7}{8}$ in. at the abutments. This section was to offer less wind resistance than a comparable conventional box girder section; and it is sufficiently rigid—it does not require internal longitudinal ribs for the lengths selected for fabrication.

Following fabrication and erection, the arch was prestressed at the abutments to counteract uplift acting on the structure in high winds.

Another reason for the tube design is its comparatively low weight. Tube sections were prefabricated in Germany and brought to the job site by barge.

The tube bridge is part of a project that will connect the islands of Tjorn and Ohrust, in the Gothenberg archipelago, with the mainland. Three bridges are involved. The tube arch bridge connects two small stepping-stone islands—Almon and Kallon. The other two bridges are prestressed concrete girder structures.

Prime contractor on the project is AB Stanska Cementgjuteriet of Stockholm, which built the two prestressed concrete bridges as well as the concrete abutments and deck of the arch bridge.

Engineers of the German firm, M. A. N., designed the bridge. Fabrication and erection were by the German combine—Demag—M.A.N.

In developing the unusual design, engineers carried out wind-tunnel tests at the Stuttgart Institute of Technology. These tests demonstrated the favorable aerodynamic characteristics and structural adequacy of the tube sections. Designers further lowered wind resistance of the bridge by choosing a circular cross section for vertical supports between the tube arch and bridge deck.

Approaches to the bridge are elevated prestressed concrete structures supported on slender concrete columns in pairs spaced about 28 ft 6 in. c-c.

(*Story continues on p. 36*)

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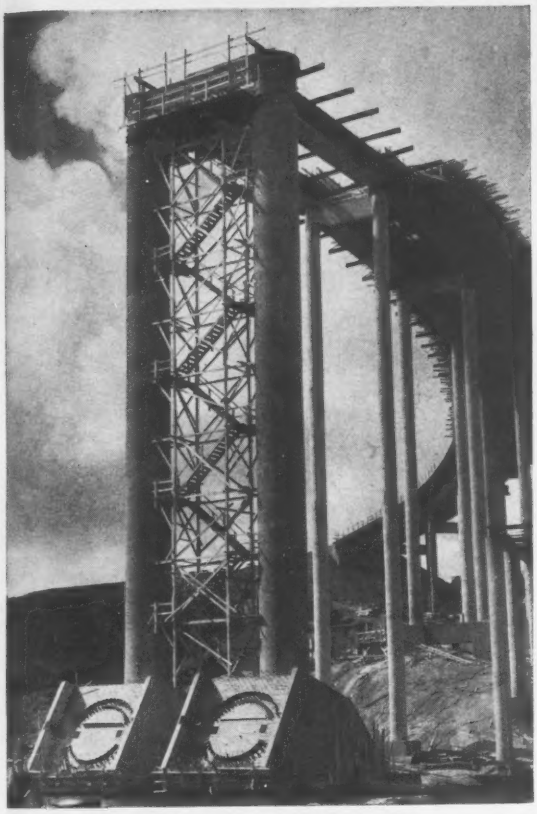
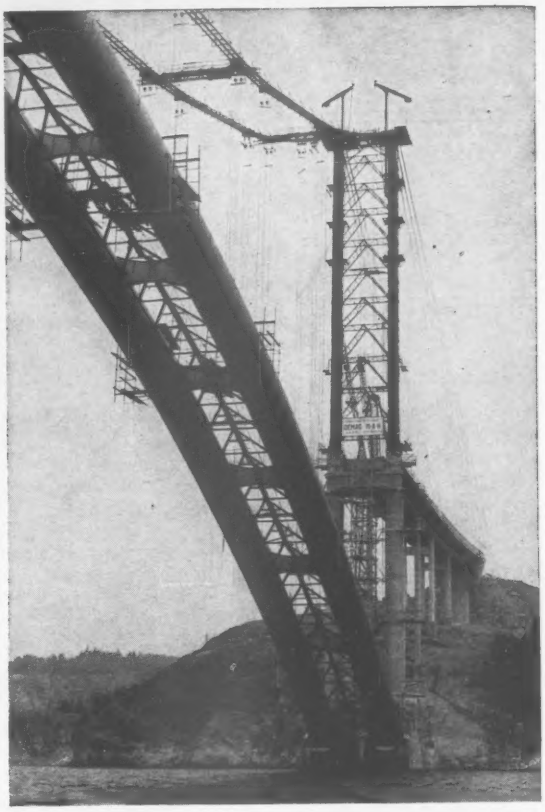
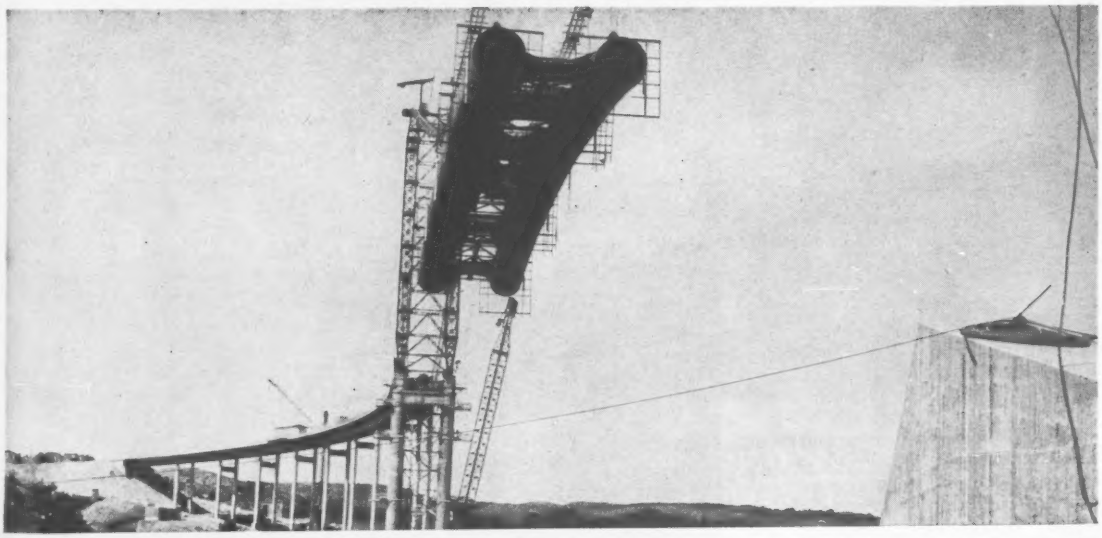
Bridge Spans Swedish Fjord



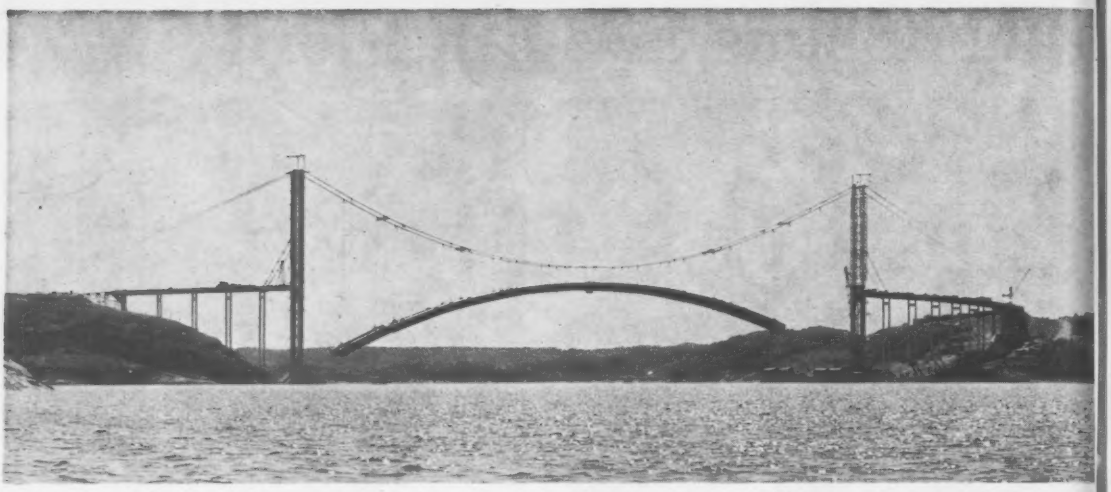
PRESTRESSED CONCRETE APPROACHES rest on slender columns. Engineers designed abutments for prestressing arches.



ENDS OF ARCH are bolted to abutments. Thin-walled steel tubes—12½ ft in diameter—are joined by cross girders and bracing.



ERECTION OF THE TUBES began at mid-stream and continued from the center both ways to the abutments. In an area where 90-mph winds are commonplace, thin-walled tubes were found to have better aerodynamic characteristics than conventional box girders.



Arches hang from temporary suspenders. Tube sections were assembled on floating platform.

Columns supporting roadway are slightly more than 3 ft in diameter and of varying height. The tallest is about 121 ft high.

The two end columns on either side of the channel form the abutments for the bridge deck and are heavier in section than the others, being about 8 ft in diameter. They rest on the same footings that support the arch abutments.

The contractor erected the abutment columns by the use of slip forms. All other columns supporting the roadway were poured in sheet steel forms made up of standardized sections and set up fully assembled in pairs.

The owner—Swedish Waterways Commission—specified that erection of the arch was to be done with as little interference as possible to shipping. This and the complete absence of a suitable flat area of ground within the immediate area of the job site lead Demag and M.A.N. engineers to preassemble tube sections at the Demag plant in Dinsburg, Germany. Except for the shorter center section, prefabricated sections were 27 to 28 ft long.

Pre-assembling permitted the contractors to check the curvature of the tubes accurately and prepare the ends for field jointing.

The individual tube sections were transferred from the barges to a large floating platform at the job site. Workmen then assembled the individual sections into twin-tube sections from 76 to 127 ft long. Connections were made by riveting and high-strength bolts.

The end and center sections and every third section along the length of the arch are connected by plate cross girders. The contractor provided triangular lattice bracing between the parallel arches in line with the tube centers. At points where the cross braces are attached, each tube has transverse internal ribs and an internal tubular strut.

Designers provided similar internal support at points where the vertical deck-support columns are attached to the tube arch. There are 12 such vertical columns on each arch. They vary in diameter from 12 to 28 in. Spherical bearing caps are provided at the ends of the columns.

As assembled on the floating platform, parallel tube sections are spaced 28 ft 6 in. apart.

To erect the tube arch, Demag personnel built a temporary suspension tower at each end of the structure. From the towers were hung two cables, each made up of 24 individual strands.

Workmen first lifted into place and secured the 13-ft-long center section of the arch. This was followed by successive 27-ft sections installed on either side of the center. This procedure was followed until the entire arch had been assembled, eleven sections in all. During erection, engineers maintained a careful check of the shape of the arch. Erection of the tube sections was done only in moderate winds and when shipping traffic was light.

When the arch was completely assembled, workmen lowered it onto the abutments. The arch is bolted to the abutment at each end with a prestress of about 5,000 tons.

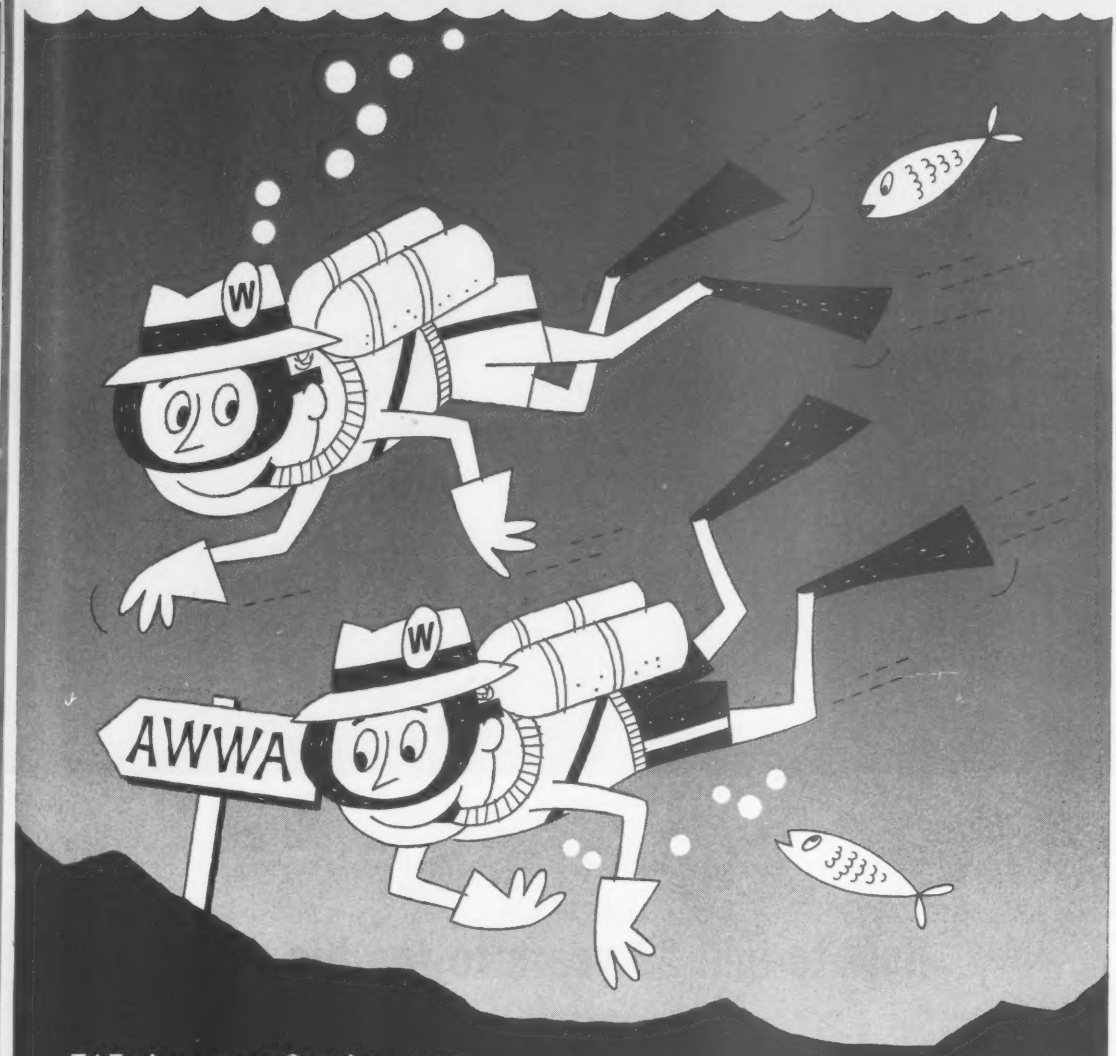
The contractor erected the steel for the bridge deck in three sections. On either side, a deck section extends from a point about 75 ft from the center to the abutment. Designers provided suitable connections and bearings to allow the deck to accommodate itself to lateral deflection of the arches under wind loads.

The bridge deck is composed of independent sections about 105 ft in length. The sections are of composite steel and concrete design. Composite action is obtained by stirrups welded to the cross braces between the tubes.

The tube arch and two prestressed concrete bridges are links in a major road project about five miles long. Included in the job is Sweden's first highway tunnel. The tunnel is 390 ft long, with a cross sectional area of 505 sq ft; width is 29.5 ft.

Other portions of the road involved heavy earth and rock excavation. In one section only 800 ft in length, workmen excavated 10,000 cu yd of rock.

Bridge will have composite deck supported by vertical columns.



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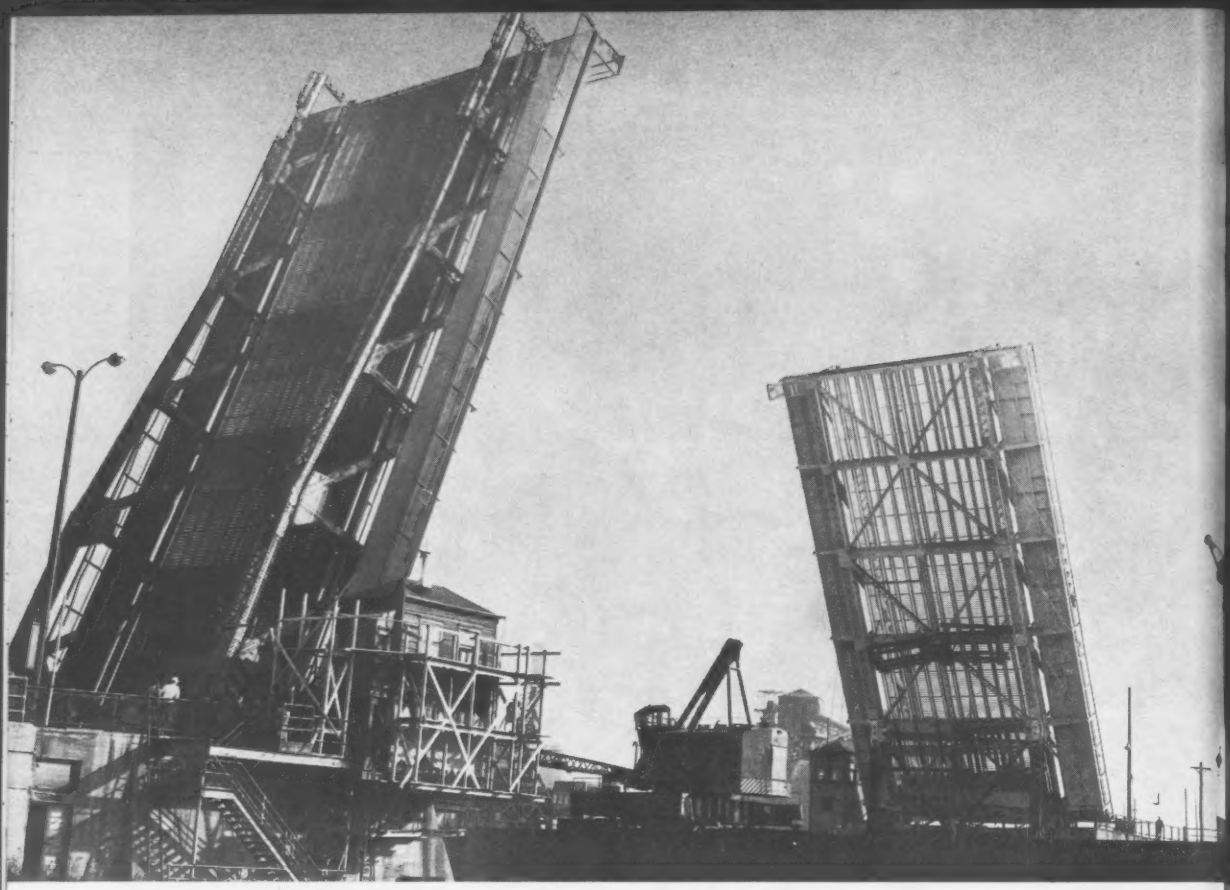

How to add 20 years to the life of a bridge

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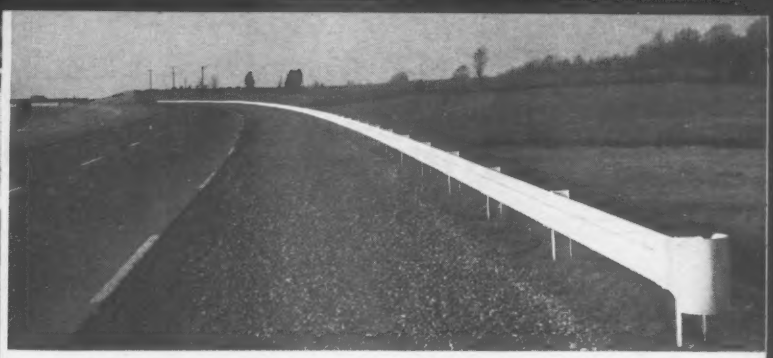

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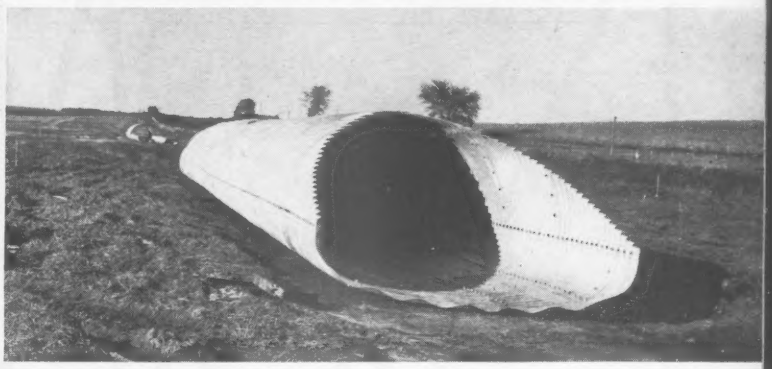

Chicago's 92nd street bridge was built in 1914. It's a bascule bridge that averages 5,000 openings a year. Local engineers call it the city's busiest bridge. Mr. S. J. Michuda, Chicago's Chief Bridge Engineer, recently included the 92nd street bridge in his program to redeck the city's deteriorated movable bridges with steel grid flooring. ☐ Mr. Michuda tells why: "Steel re-decking adds twenty years to the life of a bridge, and cuts maintenance costs to the bone. Steel grid is strong and durable . . . it's able to take the brutal pounding of heavy traffic. ☐ "For instance," says the Chief Engineer, "snow chains pepper our ancient bridges like shotgun pellets during the winter months. But, there's no problem with steel grid flooring. It can't break up." ☐ Steel grid flooring greatly reduces dead load—permits a bridge to handle heavier vehicles. USS AmBridge I-Beam-Lok is a sturdy, lightweight bridge flooring. It installs easily and quickly with few traffic interruptions. The filled type is available in units 6′ wide and up to 49′ long, that apply directly to stringers on spans from 6′ up to 8′ centers. The open type is also available for spans up to 4′ center. ☐ For specific information, write to our Pittsburgh Office. We'll send you a copy of our 32-page catalog.

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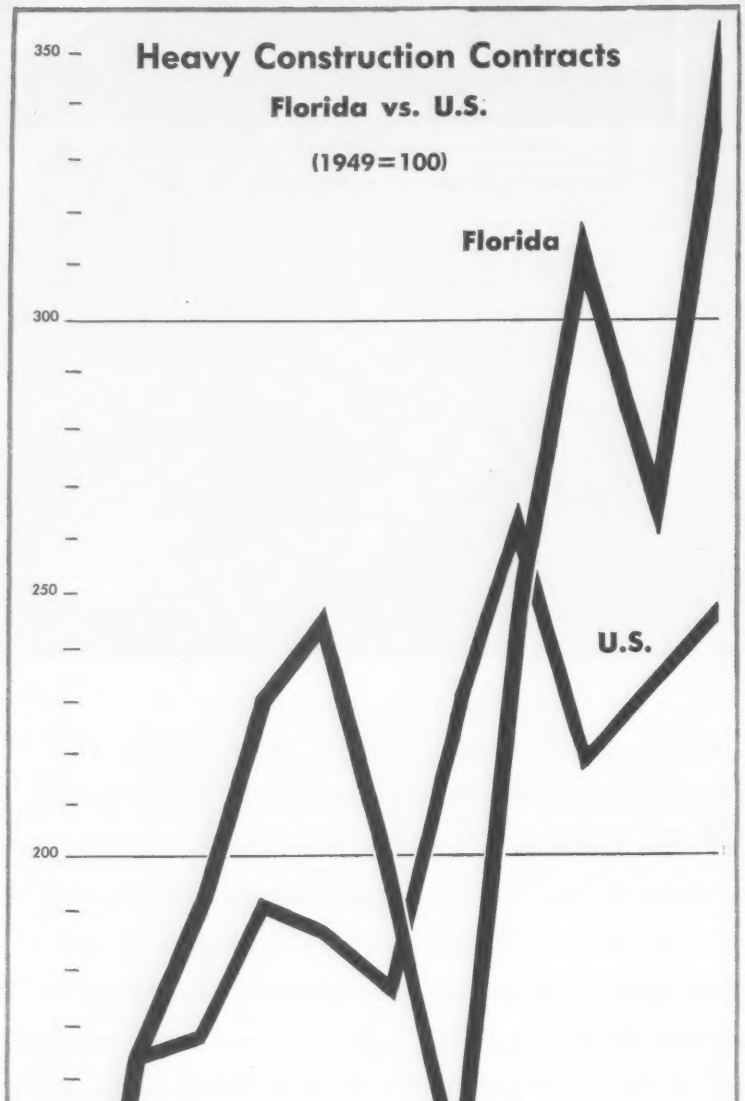
Florida Construction: Plenty o



Many Florida structures may be built on sand, but the state's construction market is founded firmly on a solid economic base.

Put these statistics together and they spell "boom":

- Florida population has leaped 80% since 1950, from 2.8 million to an estimated five million. U.S. population in the same period has climbed only 20% in that period, from 150 million to about 180 million.
- Florida personal income has soared 191.4% since 1949, from $3.2 billion to $9.35 billion in '59. Nationally, personal income has increased 84.5%, from $206.4 billion to $380.8 billion. (Data compiled by Business Week, a McGraw-Hill publication.)
- Florida contract awards as reported by ENR have soared 252%, from $166.8 million in 1949 to a record $587.9 million in 1959. Nationally, contract awards rose 149%, from $8.2 billion in 1949 to $20.4 billion in 1959. And while contract awards in the U.S. climbed 6% from 1958 to 1959, they leaped 30% in Florida.
- Florida has also increased its share of the national construction market. In 1949, the Florida contract award total was equal to 2% of the U.S. total. Last year, the total was 2.9% of the U.S. construction market. (As still another measure of construction's growth in Florida, ENR's circulation there went up more than 211% from 1949 to 1959, while it grew 92% nationally.)

Both public and private work, and each type of construction in those categories, have shared in Florida's growth. Total public works in the 10-year period expanded 439% to a total 1959 volume of $325 million. Private work rose 141% to $262 million in 1959.

Steep climbs of the type experienced in Florida cannot be maintained without interruption over too long a period. There were two setbacks in the total market—1955 and 1958—but the upward path was quickly retraced.

And in the individual construction markets (see p. 46) volume varied from time to time, but the trend was generally up.

So much for the bright recent past. The future market for construction in the state is even more lustrous. ENR's Backlog of Proposed Heavy Construction in Florida stood at $2.2 billion on December 31, 1959. This was 154% higher than the Backlog volume on December 31, 1959. And the 1958-'59 Backlog increase was 17%.

Each category rose substantially over the 1958 planned construction volume,

...t and Plenty of Competition

indicating that many types of contracts and engineers will get a slice of the construction pie.

Powering the expanding construction market is Florida's economic growth rate. It has varied between 8% and 10% in each of the last 10 years, except 1958, when it dropped to 3.3%. (A national recession and freezing weather pinched the tourist business and hurt agriculture.) By the end of last year, however, growth was back on the track at a rate of 8%.

Currently, there is some softness in the housing market, a result of tight money and high interest rates late last year and early this year. But with the recent general downturn in money market rates, revival of investor-interest in mortgages could firm homebuilding.

Climate is undoubtedly a basic factor in the state's economic expansion. It attracts and holds a large labor market—and that attracts new industry. And industry itself seems able to "create" a labor force when it announces plans to build in the state.

General Electric Co. reports it probably never will lack skilled labor for its St. Petersburg plant. By the time that installation was opened in 1957, it had received 17,000 job applications. The company required less than 1,000 employees.

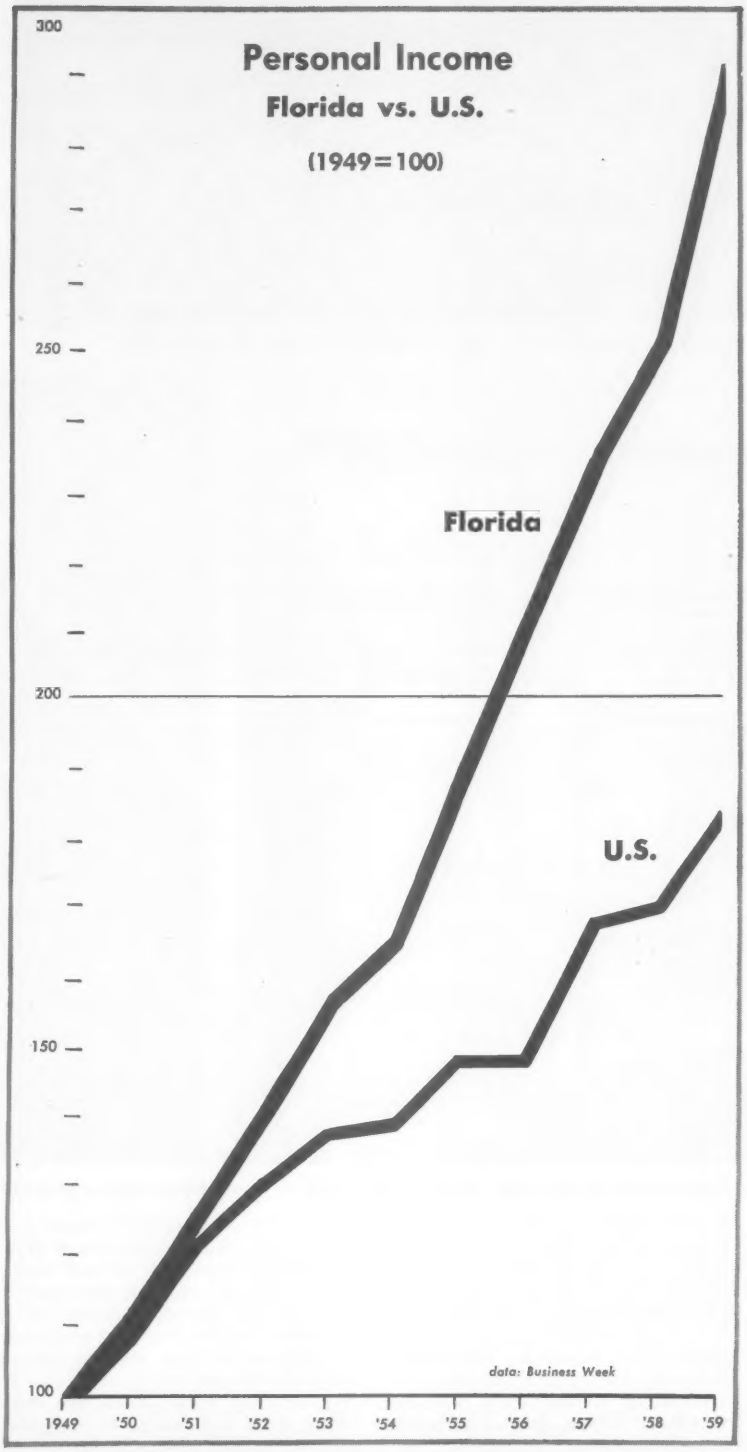
The Martin Co.'s Orlando division employs about 7,000 persons. But it received more than 20,000 applications from all parts of the country after it announced plans to construct another plant.

The willingness of workers to come to Florida and the large existing work force already there provided the impetus for construction of close to 3,000 new plants and major additions to existing factories last year.

Forty-nine of Florida's 67 counties obtained new manufacturing plants last year. Dade County (Miami area) continues to lead in the number of new plants; adjoining Broward County (Fort Lauderdale) to the north is second in growth.

Population growth in the last 10 years has been fastest in four major geographical areas: The lower east coast from West Palm Beach to Miami, with greatest expansion occurring in the Miami and Fort Lauderdale areas; the lower west coast from Tampa-St. Petersburg to Naples; Orlando and its surrounding area in the east central zone; and Jacksonville in the upper northeast.

In the next decade greatest population increases are expected at Fort Pierce, up 180%; Punta Gorda, up



Concrete plays a big role in Florida construction activity.

Highways will add $120 million t

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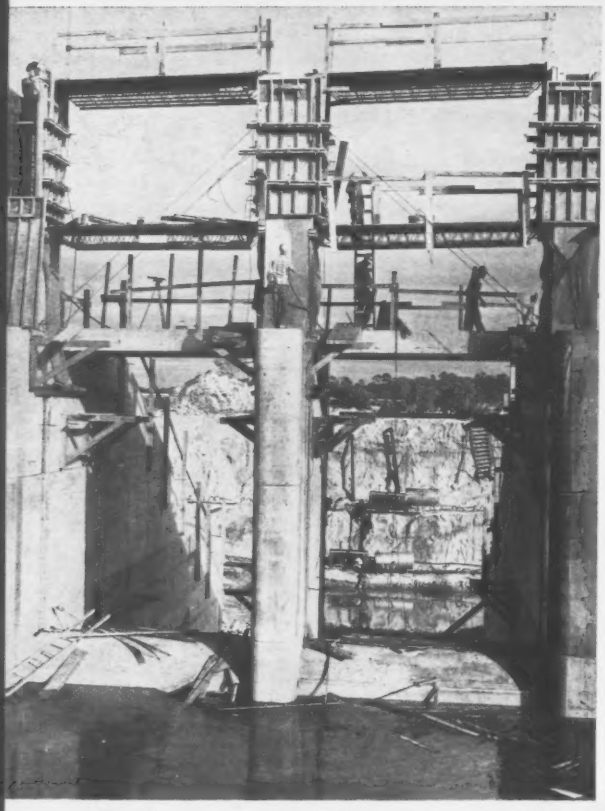

Flood control: steady, long-term market.

Housing, one result of a mild climate, is most widely

publiciz

163%; Naples, up 160%; Stuart and Fort Lauderdale, each up 150%; Orlando, up 140%; Cocoa-Melbourne, Sarasota and West Palm Beach, each up 110%; Fort Myers, up 105%; and Vero Beach and Milton, each up 100%. (Milton, near Pensacola, is becoming a center for the chemical industry.)

Providing housing for a population that by 1970 is expected to rise another 2.5 million is not expected to be a problem. It's estimated that developers now own or control enough land to accommodate about 1.5 million houses. That's enough land for the next 15 years at the anticipated 1960 rate of 98,000 to 100,000 housing starts a year.

Much of the land, however, requires heavy investment in improvements: filling, draining, sewers, water and roads. There is a large market for engineers and contractors in those fields.

Raising the land above flood or groundwater levels requires a huge outlay of money—$1,500 to $2,000 to raise one acre by one foot. It is this operation that makes the dredge and dragline symbolic of Florida construction.

Land reclamation itself is a multi-million dollar business, but like most of Florida's construction market, it's highly competitive, even though much work is available.

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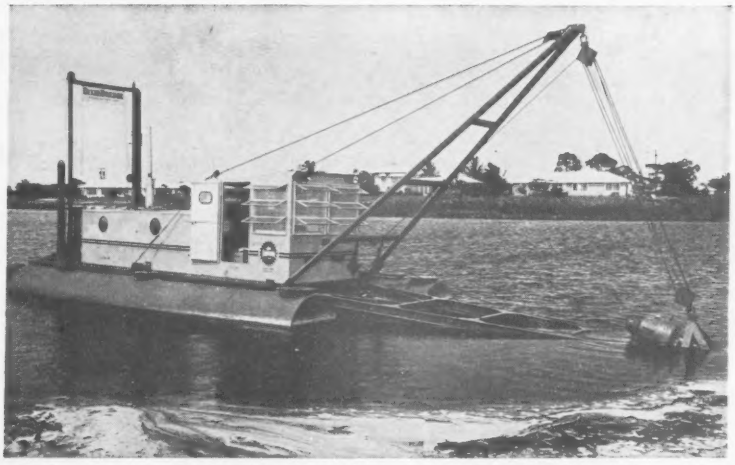
Pratt & Whitney Div., United Aircraft Corp., builds in steel.

publicized construction market.



Dredge is a basic tool in development of Florida building sites.

Behind the land developers come the constructors of houses, schools, hospitals, roads, sewers and water systems.

Some say that many Florida developers are building what may become the "slums of the future"—houses that may eventually find buyers only among the lower economic and social groups. George Simons, Jacksonville consulting engineer and city planner, urges that state and community officials establish regulations requiring subdividers to provide developments and physical installations that will make them useful over a long period of years. He says:

"Tens of thousands of houses are being built in subdivisions where little or no thought is given to recreation areas, width of streets and other facilities which hold value to the community from one generation to the next."

But a more immediate problem is schools. The state provided its counties with more than $295 million in school construction money between July 1, 1954, and June 30, 1959. Millions more were raised by the individual communities by the sale of bonds.

Still, there's a classroom shortage now; and it will get worse as school enrollments rise. School population, now over 1 million, is expected to go well

(*Story continues on p. 46*)

BETHLEHEM SLABFORM

cuts concrete forming costs by one-third

At the Cole Steel Equipment Co. warehouse in York, Pa., 87 tons of Slabform were used directly over the Bethlehem structural shapes. Architect: Buchart Associates; general contractor: I. Reindollar & Son, Inc., York.

At Cole Steel Equipment's new warehouse in York, Pa., some 87 tons of Bethlehem Slabform were welded directly to steel beams to support a 4½-in., poured-in-place slab.

By using Slabform in place of the usual forming material over steel beams, it is estimated that forming costs were cut by one-third. Here's why:

1. Slabform covered the floor area quicker, at less labor cost.

2. Slabform is a permanent form, saving the entire cost of stripping.

The fasteners used with Slabform project into the slab and effectively tie the slab to the steel beams—helping to insure composite action.

Reinforcing bar high chairs, specially designed for use with Slabform, are available.

Slabform Ideal as a Concrete Form

Bethlehem Slabform is a high-strength, formed steel sheet which is used both as a permanent steel form for poured concrete, and in roofs as the permanent supporting member for lightweight insulating concrete fills. In the latter case Slabform is always used galvanized. When used as a form only, Slabform is generally furnished black (uncoated) for reasons of economy.

Longitudinal Ribs for Strength

Bethlehem Slabform is manufactured from steel having a yield point over 90,000 psi. Longitudinal ribs give it exceptional strength.

Three Weights and Patterns

Slabform is available in three weights and patterns —Standard, Heavy-Duty and Extra Heavy-Duty—to satisfy the requirements of various spans and loads.

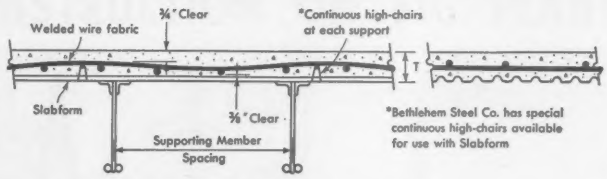
All three weights are available in black (uncoated) and galvanized finish.

Design load capacities, suggested specifications, and other information appear in Sweet's Architectural File. The nearest Bethlehem sales office would be glad to send you our Slabform folder, or talk with you about your job. No obligation, of course.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

The table shows the load capacities for structural reinforced concrete slabs over Slabform. It shows various depth slabs reinforced with minimum welded wire fabric as required by code. This table also shows the type of Slabform recommended as a form.



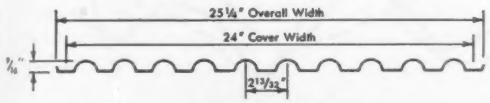
LOAD CAPACITIES OF STRUCTURAL REINFORCED CONCRETE SLABS

(INCLUDING REQUIRED TYPE OF SLABFORM)

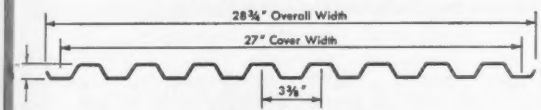
Slab Thickness (Inches)	Slab Weight (Lb/Ft²)	Slab Reinf. (Welded Wire Fabric)	LOADS IN LB PER SQ FT FOR SPANS SHOWN											
			1'-6	2'-0	2'-6	3'-0	3'-6	4'-0	4'-6	5'-0	5'-6	6'-0	6'-6	7'-0
2½	27	6 x 6—10/10	366	194	114									
2½	27	6 x 6—6/6				169	117	83						
3	32	6 x 6—10/10		279	167									
3	32	6 x 6—5/5				287	181	131						
3½	36	6 x 6—4/4					300	221	167	128	85	66	51	39
4	42	6 x 6—4/4						277	209	146	113	88	68	53
4½	48	4 x 4—6/6							279	199	156	123	98	78
5	52	4 x 4—4/4								348	278	225	185	
TYPE OF SLABFORM			STANDARD			HEAVY-DUTY				EXTRA HEAVY-DUTY				

NOTES:

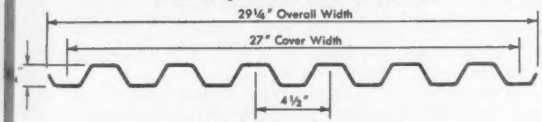
1. Above table gives superimposed loads which various depth slabs will carry when reinforced as shown. The type of black (uncoated) Slabform to be used is also shown. When galvanized material is used add the slab weight to capacities shown to determine allowable superimposed loads. This is based on the galvanized material carrying the dead weight of the concrete. Loads shown are for interior spans only.
2. The recommended Slabform shown in each instance will not deflect more than 1/240 span under weight of concrete only.
3. Superimposed loads were determined as follows:
   a. Bending moment $\frac{Wl^2}{12}$; fc = 2500 psi, fs (welded fabric) = 28,000 psi (50% min. yield point per ACI 306(b)).
   b. Reinforcing for 2½ in. and 3 in. slabs on spans up to 30 in. based on minimum allowable for temperature reinforcing per Steel Joist Institute "Code of Standard Practice" Section 3.7.
   c. Reinforcing for 3½ in. and deeper slabs based on minimum allowable reinforcing per ACI building code 702(e) 2.
   d. Effective slab depths determined as follows:
      Standard Slabform d = T—1.28
      Heavy-Duty Slabform d = T—1.44
      Extra Heavy-Duty Slabform d = T—1.65
   e. For end spans reduce capacities shown in table by 16%.
   f. For simple spans reduce capacities shown in table by 33%.



STANDARD SLABFORM
Standard Lengths: 6'-3", 8'-3", 10'-3" and 12'-3".

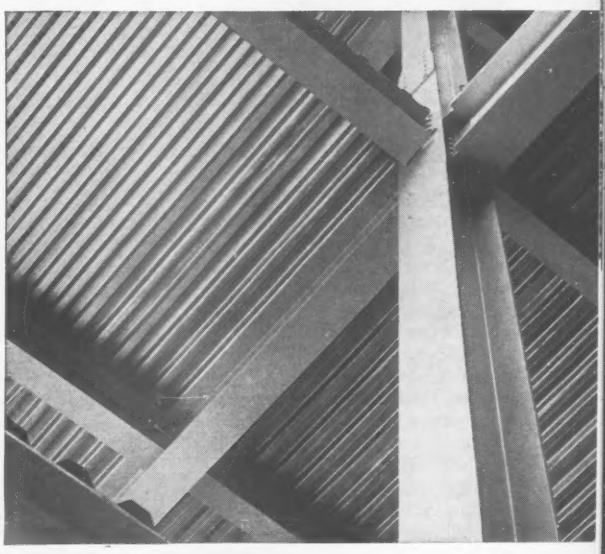


HEAVY-DUTY SLABFORM
Standard Lengths: 6'-0" to 18'-6" in 6" increments.



EXTRA HEAVY-DUTY SLABFORM
Standard Lengths: 6'-0" to 21'-6" in 6" Increments.

NOTE: ALL DIMENSIONS NOMINAL



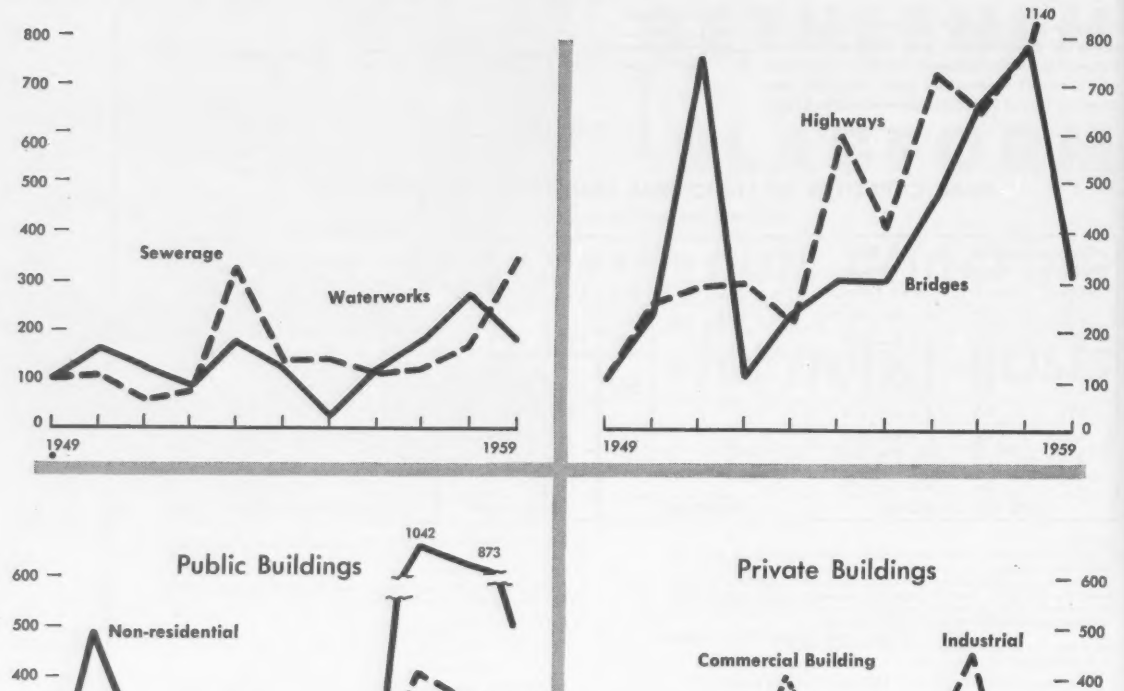
After installation, the appearance from below is neat and clean

BETHLEHEM STEEL

BETHLEHEM STEEL

How Florida's Construction Market Acted, 1949-'59

data: ENR Contract Awards (1949=100)



over 1.6 million by 1966, according to C. W. McGuffey, the state's school plant administrator.

He estimates that by 1962-'63, the state will need more than $420 million worth of new school buildings.

While the market for school construction is headed for a big increase, the long boom in hotel-motel-restaurant construction shows signs of faltering, although it remains a rich source of construction business.

Last year, hotel-motel-restaurant building permits represented construction volume of $108.3 million, according to the Florida Hotel and Restaurant Commission. This compares with $111.3 million in 1958 and a record $137 million in 1957.

The decline in the tourist accommodations market will continue this year; perhaps next. Although '59-'60 tourist trade is at a record, vacancy signs are common in the leading resort areas. That's a good indication that hotels and motels have been built faster than the increase in tourist traffic.

In fact, hotel construction so far this year is a dead market; not one permit for such a building has been issued yet. But there is still some life in the overall tourist accommodations construction market, even though it is down from last year. Building permits for motels, and additions to existing hotel and motel facilities in the first quarter represented building volume of $20.8 million, down $5 million from last year.

The flood of tourists into the state each year puts a strain on existing transportation facilities. Needed, are new highways, more and larger airports.

Tampa's airport recently completed runway extension projects as the first step in $27-million airport improvement program.

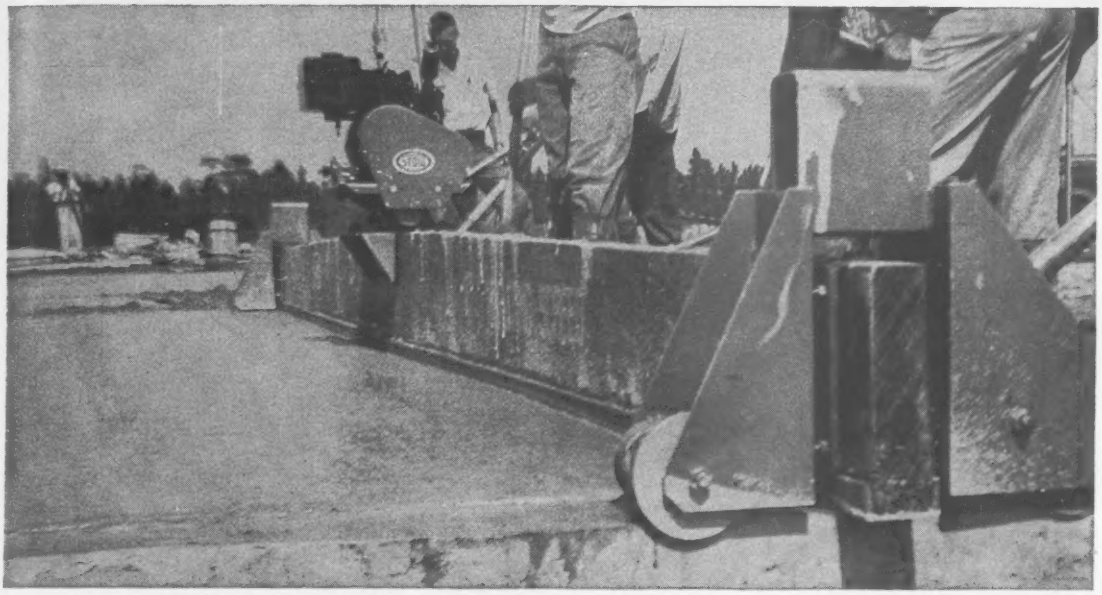
Highway construction will continue to provide a healthy chunk of new construction business. By the end of this year, the state will have spent approximately $250 million for highways since December 1, 1959. The total includes federal-aid money.

Construction is now under way on about 160 miles of the Interstate System having an estimated cost of $160 million. Plans and surveys are started on another 250 miles of road expected to cost $370 million.

To this total can be added construction outlays for the Pinellas Bayway near St. Petersburg. The Florida Development Commission just announced that it soon will sell $16.8 million worth of bonds for this system of highways, causeways and bridges that will connect the mainland with several islands in Boca Ciega Bay.

(*Story continues on p. 48*)

STOW VIBRATING SCREED CUTS TIME AND COSTS FOR JACOBS CONSTRUCTION ON BIG PLANT JOB



STOW 20' Vibrating Screed at work on pre-planned 20' wide slab. 3" slump concrete is struck off smooth and true-to-grade, completely vibrated. Job site: St. Mary's Craft Co. Plant, St. Mary's, Georgia. Contractor: S. S. Jacobs Co.

STOW'S new job-tailored combination of trowel and screed are cutting finishing costs for contractors on important jobs in many parts of the country. And, according to these contractors*, profits jump when they use Stow equipment, too!

Take the huge, sprawling new bag plant built for the St. Mary's Craft Company at St. Mary's, Georgia. The S. S. Jacobs Company of Jacksonville, Florida won the contract, and with nearly 10 acres of concrete floor to pour, decided they needed a STOW vibrating screed on the job.

Jacobs' superintendent on the St. Mary's job reports, "Using the STOW vibrating screed not only speeds the job, but is giving us a better, denser concrete because we can pour a lower slump. It is also saving us all the jitterbugging and other work that ordinarily would be required. Important to us, too, we can get the troweling machine on the job behind the screed from 1 to 2 hours earlier."

There is similar satisfaction with Stow G-46 Roto-Trowel used on the job . . . "it's placing the concrete faster and giving a smoother finish than other makes previously used." The operators also praised its ruggedness, the clutch, the way the blade pitch can be changed and the handy lifting hook for second floor use.

TRY STOW EQUIPMENT on your next project. Check with YOUR DISTRIBUTOR AT THE PLANNING STAGE. He'll be glad to show you how Stow equipment may help you make more money on your next job.

Ask him for an on-the-job demonstration!

STOW MANUFACTURING CO.

BINGHAMTON NEW YORK

STOW G-46 Roto-Trowels follow Screed, floating and finishing slab. 46" diameter and four blades shorten finishing time sharply.

Send today for complete specifications and details on Stow screeds, vibrators, trowels, grinders, and tampers.

***names on request**

STOW MANUFACTURING CO.
Dept. B-2, 19 Shear St., Binghamton, New York

I'm interested. Send me a copy of Bulletin 580 on Stow Concrete Equipment and Bulletin 587 on "The Advantages of Screeds."

NAME ..... TITLE .....

COMPANY .....

STREET .....

CITY ..... STATE .....

STRESSTEEL was the solution to this Engineering Problem

Medical Research Center, University of Pennsylvania, Philadelphia.

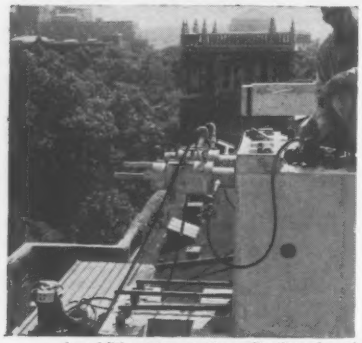
Louis I. Kahn, Architect: Keast & Hood and Dr. August E. Komendant, Structural Engineers.

Joseph A. Farrell, Inc., General Contractor.

Atlantic Prestressed Concrete Co., concrete units.

THE PROBLEM: How to assemble and prestress in place, 8 precast concrete segments in each floor system of a 7 story clear-span Vierendeel frame building, with maximum efficiency and minimum cost.

THE SOLUTION: Post tension with STRESSTEEL, taking advantage of the inherent rigidity of STRESSTEEL Bars and the simplicity of STRESSTEEL Wedge Anchors.



The building consists of 3 wings, each 47 feet square, made up entirely of precast members surrounding a central unit of cast-in-place concrete. The framing in each floor required post-tensioning 2 beams made up of precast segments. STRESSTEEL Bars, 2 @ 1⅛" ∅ and 3 @ 1¼" ∅ furnished a force of 575,000 lbs. per beam.

These bars were threaded through holes preformed in the interlocking precast segments by workmen operating from a scaffold suspended from the crane. STRESSTEEL Bars were simply and quickly tensioned with electrically operated hydraulic jacks and then pressure grouted.

In addition to precast applications, imaginative engineers are using STRESSTEEL Bars as the effective solution to many other problems. These high strength alloy steel bars are available in sizes up to 1¼" ∅ with recommended working stress up to 90,000 psi. Equipped with wedge or threaded anchors, STRESSTEEL Bars have been used for sheet piling ties in cofferdams, embedded ties for tainter gate trunnions, arch ties, buttress ties and many other unusual and special applications.

You will achieve superior results at substantial savings with STRESSTEEL because it is . . .

- High strength alloy steel
- Low in labor cost
- Low in initial cost
- Easy to tension

Are you working on a special anchorage, tie rod or foundation problem? STRESSTEEL'S high strength reinforcement, combined with the advantages of post-tensioned prestressing, may well be the optimum solution. Ask us.

Write for Technical Bulletin No. 2. Member—Prestressed Concrete Institute

STRESSTEEL CORPORATION

221 Conyngham Ave. • Wilkes-Barre, Pa.

Sales Offices: Minneapolis and San Francisco

Another large public works operation—and a constant one—is the long-term flood control project in central and southern Florida. This flood control and conservation program is a joint effort of the U. S. Corps of Engineers and the state. The area affected takes in Dade County and 16 counties extending outward from Dade.

The program was established in 1948. Between 1950, when federal appropriations began, and this June, the U. S. will have spent about $73 million. Appropriations for fiscal '60 were about $6.8 million.

State and local contributions amount to 15% of construction cost. Their outlays take the form of cash, land, easements, rights-of-way and operation and maintenance of the projects.

The project is much heavier on the conservation side than most flood control projects. The Corps defines the problem as restoration of the "natural balance between soil and water insofar as possible by establishing protective works, controls and procedures for conservation and use of water and land."

Urban redevelopment, which began in Florida only recently, is a new market for architects, engineers and contractors. Florida cities and towns had been barred from participation in the 11-year-old federal aid program by a 1952 state supreme court decision, which was reversed last November.

The door is now open to the more than 351 cities and towns to eliminate slum areas and in their place build new residential, industrial and commercial buildings.

Tampa moved fast after the decision and has already obtained a $50,000 advance allocation from the Urban Renewal Administration. An additional $821,662 has been reserved for use as a capital grant.

Miami and the Metropolitan Dade County governments are trying to settle their differences on which should handle the city's urban renewal program. Because the metropolitan government handles activities considered area-wide in nature, it is believed Miami should give its renewal plans to Metro, then help that government operate the slum clearance program.

While waiting for the urban renewal market to develop there, construction men can remain busy in other fields, but not without some sharp competition.

Here's a brief rundown on the construction picture in three of the major growth areas in the state—Miami (all of Dade County), Tampa-St. Petersburg and Jacksonville.

• Miami (Dade County)

The one million population of Greater Miami (all Dade County) is

(*Story continues on p. 53*)

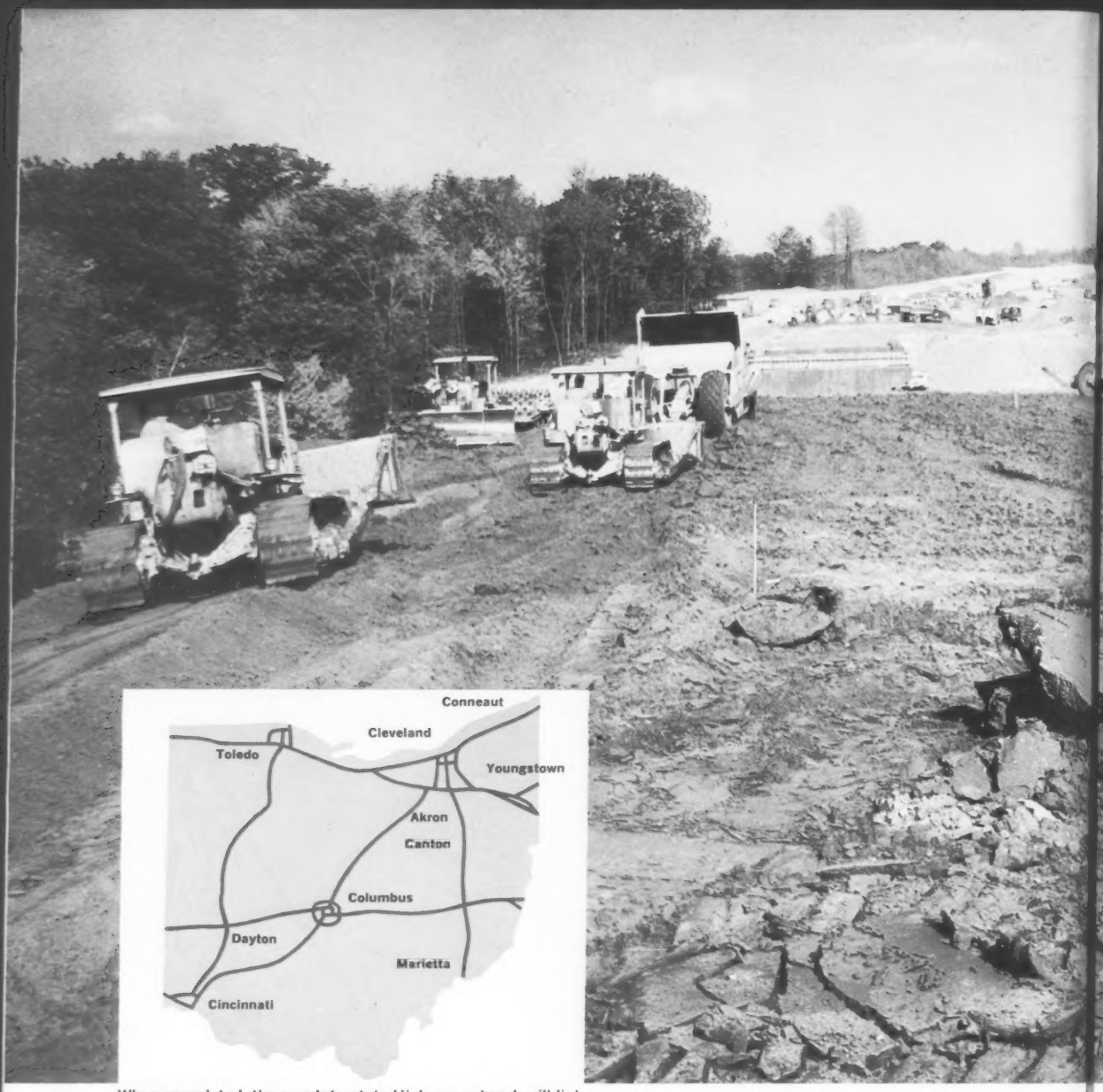
C. F. Replogle Construction Company moved 2,000,000 yds. of earth on its section of the Ohio Freeway, much of it at a rate of 100,000 yds. a day.

On the new Ohio Freeway . . .

In a duel with time and weather, 3 contractors report

GULF MAKES THINGS RUN BETTER!

In 1972, the State of Ohio will be crisscrossed by a coordinated network of seven interstate high-speed freeways. The new $2.3 billion system will put every town, farm and factory in Ohio just a few hours away from ocean-going shipping at Lake Erie ports. Among the leading contractors working on the 326-mile leg between Cincinnati and Conneaut are the three whose equipment is pictured on these pages.



When completed, the new Interstate Highway network will link Ohio's principal towns and cities with each other, with Lake Erie ports, and with the thruway systems of adjoining states.

The land that reaches northeast from Columbus, Ohio, toward Cleveland is deceivingly flat, but its crust of clay and rock and sliding sand can be nerve-wracking to construction crews. Especially in the fall, when weeks of rain pound the mud into glistening muck. Then the dozers bog down, the tracks slip and spin, the wheels stop turning, and the muddy men stand in the slick brown sea and silently shake their heads. But the clock *never* stops. The days and the weeks tick off, and the completion date gets closer and closer.

Back on schedule after four-month delay

ALLEGHENY CONTRACTING INDUSTRIES of Pittsburgh had to suspend operations for four consecutive months on the Cincinnati to Conneaut Freeway. Storm after storm, followed by biting cold, made the earth unworkable. When work was resumed, completion date for their 4.37 miles of four-lane highway was only six months away. A lot of lost time had to be made up. Allegheny took every precaution against downtime.

Vigilant preventive maintenance, along with clean-burning Gulf fuels and clean-working Gulf oils and greases, kept equipment humming. Downtime was almost eliminated, and the equipment set excellent performance records. Engines ran clean with maximum power output. Maintenance costs were held down. And in spite of the weather jinx, Allegheny Contracting Industries got the project back on schedule.

Allegheny Contracting Industries give a large share of credit to Gulf products and service for keeping equipment operating at top performance on a tight schedule.

Keeping equipment at 95% availability . . . every day

C. F. REPLOGLE CONSTRUCTION COMPANY, of Circleville, Ohio, set an earthmoving pace of 100,000 yards a day. Rolling their big MRS scrapers at more than 95% availability, Replogle took on a 3-mile section of the Cincinnati to Conneaut Freeway near Bellesville-Mansfield, Ohio. Their contract called for moving some 2,000,000 yards of earth, paving, and constructing 11 bridges. In spite of foul weather, earth-moving was completed on schedule. Much of the credit for work progress and minimum downtime goes to clean-burning Gulf fuels, clean-working Gulf lubricants and on-the-job Gulf service.

"We know our engines run clean on Gulf diesel fuel," says Charles Thompson, Operations Manager, "because we have no injector trouble. This pays off . . . keeps our equipment available for work 95% of the time."

Dean Shellhouse, Superintendent of Maintenance, adds, "We use 3,000,000 gallons of Gulf fuel a year, and have no problems with gum, sludge or sulfur deposits. A first line fuel is not expensive when you consider freedom from breakdowns and resulting costs."

Replogle also uses Gulf Super Duty Motor Oil, Gulflex A grease, Gulf Multi-Purpose Gear Lubricant, Gulf Harmony® oil, and Good Gulf® gasoline.

Effective preventive maintenance of Bruns equipment included scheduled lubrication with Gulf heavy-duty oils and greases.

Bruns Coal Company executives discuss fuel and lube requirements with Gulf man-on-the-job. Left to right: Dennis Garwood, Chief Engineer; Lloyd Bruns, Vice President and Project Superintendent; Carl Bortles, Survey Chief; Frank Shindeldecker, General Superintendent; and William Stranko, Gulf Sales Representative.

The 20-hour work day

BRUNS COAL COMPANY, Zanesville, Ohio, tackled the project of clearing, grading, drainage, paving, landscaping and bridge building on a 6-mile section of the Cincinnati to Conneaut route. The schedule was tight, the going tough. Dozers, scrapers, and graders gouged the earth into road beds. Trucks hauled more than 2,000,000 cubic yards of earth. Equipment ran 20 hours a day, six days a week—building 2¼ miles of ramps and interchanges, pouring over 129,000 square yards of 10-inch reinforced concrete pavement.

To keep Bruns equipment on the move, Gulf lived with the job. All Bruns heavy-duty powered machinery operated on clean, top-power Gulf fuels, and functioned smoothly on Gulf oils and greases. Few mechanical delays. Minimum maintenance costs.

On your next project, see how Gulf makes things run better! Call your nearest Gulf office and give us the opportunity to prove it. And return the coupon for your copy of "Gulf Contractors' Guide"—the maintenance "bible" for heavy equipment.

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Please send copy of "Gulf Contractors' Guide."

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SP-9799

growing by approximately 43,000 every year. By 1965, the total is expected to hit 1.3 million; by 1970, 1.6 million; and by 1985, 2.3 million.

Housing, and the supporting community facilities residential construction generates, will keep contractors of all types on the go. Most of the land close to the cities and communities in Dade County is built up. This means development will move out south, west and north of the city of Miami.

Most of the land now available is submarginal. It must be drained, raised –and sewered. Roads leading to the metropolitan centers must be constructed.

The big land developers–Arvida, Lefcourt Realty Corp., and others of that type–are preparing to move ahead. Most of them plan the construction of entire cities, including houses, stores, office structures, manufacturing plants and even airports in a few cases.

Lefcourt Realty now is constructing a 10,000-house development. It was one of the first major jobs requiring the building up of land in Dade County.

In the first year of activity, Lefcourt built and sold 1,500 houses. It was also one of the first organizations to subcontract every bit of the work.

Now most of the builders operate on the same basis, and subcontract bidding has become "really cutthroat."

Most of the big developers also sell large sections of their land holdings to builders, with the developer's profit coming in the difference between the original cost and the resale price.

Although much of the residential developing is done by newcomers to the state, Miami area commercial and public work is generally handled by local contractors.

It's generally agreed that the price of construction in the Miami area is cheaper to the owner than in any other part of the state. Subcontractors work on a smaller profit margin, and right now materials are being bought at, or near, the unit price of three years ago, according to one big general contractor.

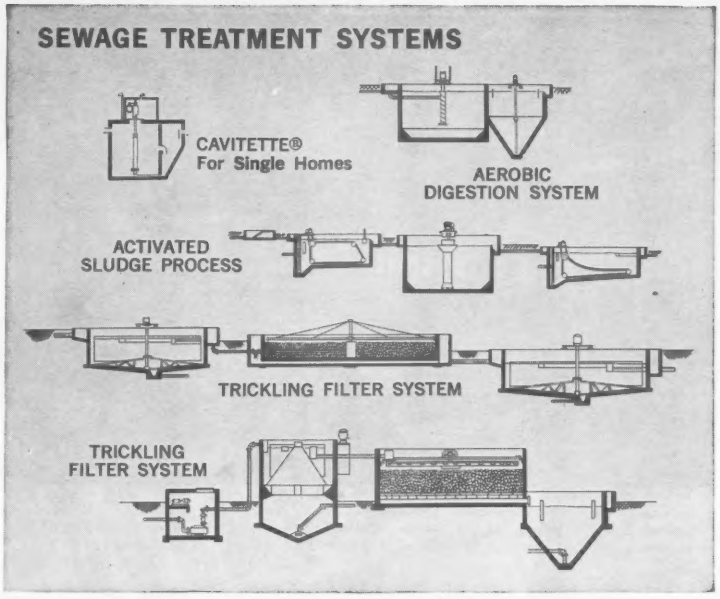
Most construction in the area is of concrete–reinforced, prestressed precast –with sharp competition in keeping prices down.

Reinforcing steel is almost all of foreign origin, and sells much below prices on domestic material. So severe is the competition from abroad that Truscon Steel Division of Republic Steel Corp. no longer supplies reinforcing bars in Florida.

• Tampa-St. Petersburg

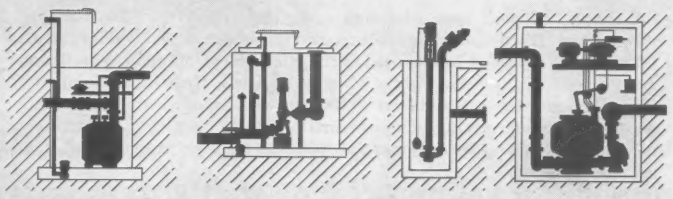
Although the Miami region leads in growth, the Tampa-St. Petersburg area is a strong contender in the competition

(*Story continues on p. 54*)



Everything the Construction Industry Needs to Treat or Pump Sewage

For schools, hospitals, subdivisions, motels, factories, etc. . . . whatever the economics, degree of treatment required, topographical conditions, expected life of installation or expandability, Yeomans offers you the equipment to solve any sewage-handling problem. It is the world's most extensive line and backed by the experience of a specialist. See Yeomans inserts in Sweet's Catalog—Architectural and Light Construction files.

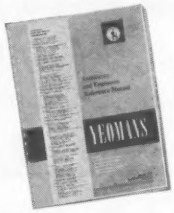


PNEUMATIC UNDERGROUND STATION "Package" design including structure. Easy to service, sanitary, low maintenance.

CENTRIFUGAL UNDERGROUND STATION Quality "package" design with short-coupled dry-pit pumps. Nominal cost.

CONVENTIONAL WET-PIT Low first cost, familiar installation and maintenance. Commercial or residential.

TOPS IN DEPENDABILITY Shone® Pneumatic Ejector—25-Year Warranty! Maintenance free. Lowest over-all cost.



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TL-6028

Rich Steel Company Warehouse, Los Angeles, Calif., constructed with 24 Rilco glued laminated wood beams, 58' in length. Contractor: Ruane Corp., San Gabriel, Calif. Architect: Joseph L. Johnson, A.I.A., Los Angeles.

Rich Steel Chooses Wood Beams for Construction and Insurance Savings

"A simple, efficient type of beam, easily erected. We are pleased to recommend Rilco for plant construction," said the contractor about Rilco laminated wood beams used in the Rich Steel Company Warehouse, Los Angeles, California. Added Gustav R. Rich, Rich Steel Company: "We thought the job could be well done with wood beams, and there was an insurance saving of approximately 5 per cent." The architect commented: "Considerably more economical than another type of construction planned."

As these people discovered, Rilco laminated wood structural members cost less to buy, less to erect, less to maintain. Members are erected by regular job crews. Each has a high strength to weight ratio, plus offering the natural beauty and fire resistant qualities of glued laminated wood.

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for new industry, commerce and residents.

Building permits representing construction valued at $101.4 million were issued last year in Greater Tampa. In 1950, building permits issued had a construction value of only $28.5 million.

Last year, approximately 20,000 houses were constructed in the Tampa-St. Petersburgh metropolitan areas of Hillsborough and Pinellas counties. This total was split about evenly between them.

Industrial growth is strong—Tampa is the largest heavy-industry city in the state. A generous amount of the industrial expansion has centered in and around the Tampa Industrial Park. Opened in 1957, this 1,000-acre site contains $60 million worth of plant investment.

Among the eight plants located there are two breweries, each representing a $20-million outlay; a $3.5-million glass products plant, and a $3-million automotive battery plant.

About 40% of the acreage has been sold and it's estimated that all the land will be under development by industry in 1963.

• Jacksonville

Jacksonville, in the northeast corner of Florida, is the state's major commercial and distribution center. Serving both Florida and Georgia, it has a marketing area that takes in four million persons.

In the eight years, close to $200 million worth of public and private construction has been poured into the heart of the city. And new volume is proposed and started every month. The Duval County Port and Industrial Authority is pushing to start a port and industrial park project at Blount Island near Jacksonville.

An economic feasibility study and an engineering survey for the development of the island have been completed. This 1,500-acre tract is in the St. Johns River 13 miles from Jacksonville.

Reynolds, Smith & Hills, the Jacksonville engineering firm that made the studies, reports it could be developed for use by ship repair yards and petroleum, chemical and construction materials industries.

The engineers also recommended purchase of 170 acres on the mainland north of the island for industrial development.

Cost of site development is estimated at $10.8 million. Deepening of the St. Johns River present 34-ft channel to 38 ft from the Atlantic Ocean to the island would cost another $11 million; for a 40-ft depth, $15.5 million. This work would have to be done by the Corps of Engineers after an authorization from Congress.

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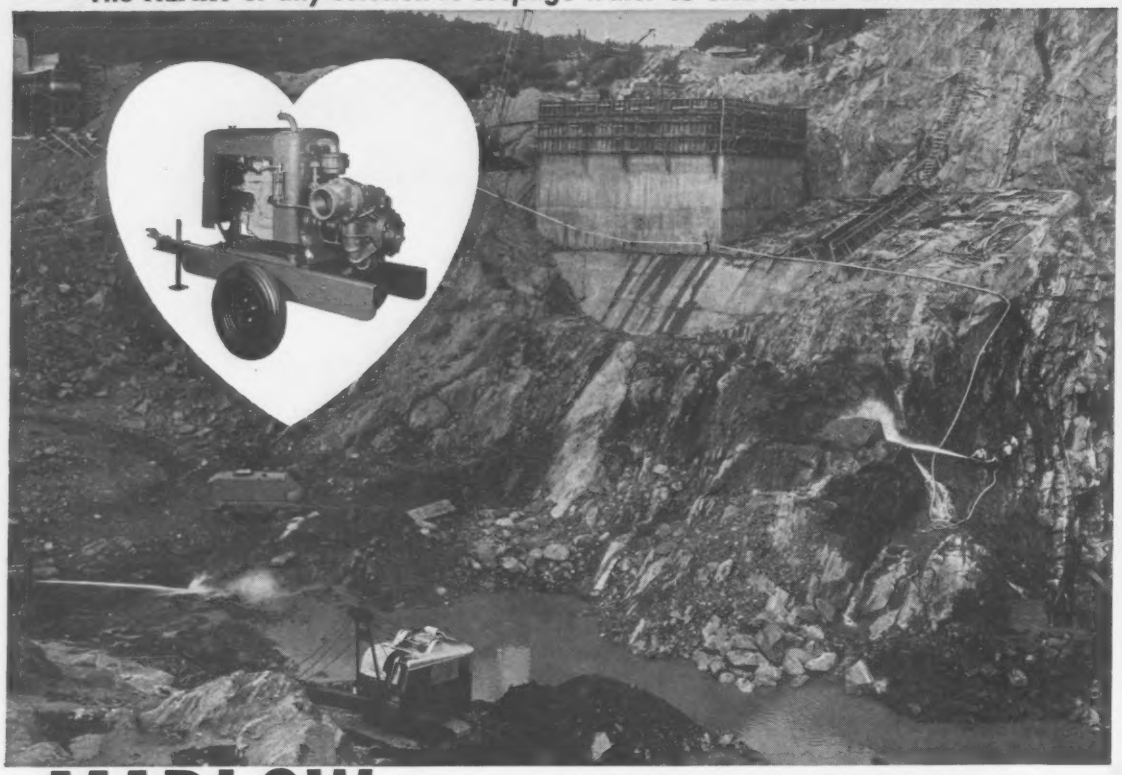

A Marlow high-pressure unit, almost a half-mile away, pumps water at 1,000 gpm to supply two jetting nozzles.

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cut costly delays on flood control dam!

A unique application for Marlow jetting pumps was on a $4,500,000 earth dam at Riverton, Conn. The dam, located on the Farmington River about 10 miles north of Winsted, is part of the flood control in the area.

The contractor used high pressure streams of water to work fines into the rock fill on the face of the dam. Two Marlows were used to supply water at 75 p.s.i. at the nozzles. These dependable Marlows pump 1,000 gpm at constant nozzle pressure, even when work was done at the top of the dam, 90 feet above the level of the river. As many as three of these 2-inch nozzles were used with the two pumps. Water drained down to a low point where a third Marlow was used for dewatering.

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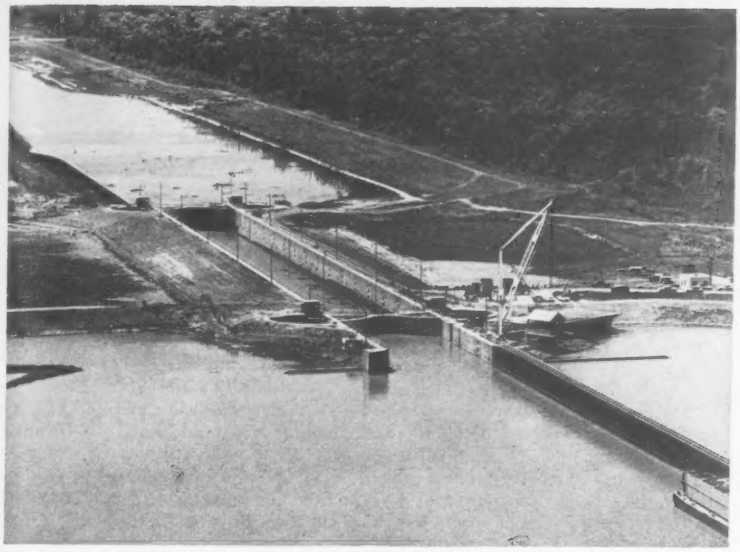


Mississippi lock was oozing at the joints. Now . . .

Crack Filler Seals Leaky Lock

Expansion joints in heavy concrete structures often present difficulties, but when the joints are 5-in. wide and subject to both internal and external water pressure, you've got real problems.

The Corps of Engineers had just such a headache at the Algiers Lock on the Mississippi River at New Orleans. The lock is located in the swampy Mississippi delta and the massive concrete lock literally floats on the saturated ooze.

The massive joints in the 725-ft structure were leaking so extensively as to hamper operation of the lock, not to mention the excessive abrasive effect of the silt and sand on the gates.

The Corps' first attempt at sealing the joints followed pretty much standard procedures—copper was bedded in a flexible material in the cavernous seams. This failed.

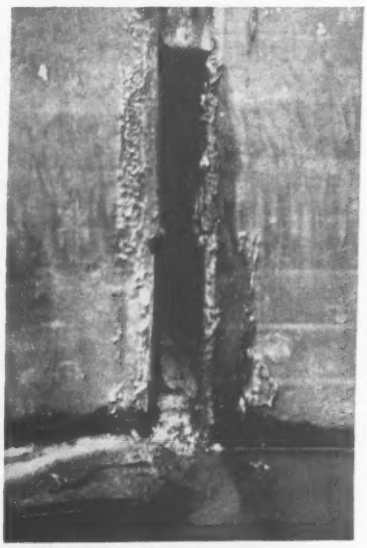
Next the joints were cleaned out and refilled with heated paraplastic and a backstopping of sponge rubber. The paraplastic, normally adequate for small seams, loosened under the ever-changing pressures of the water inside the lock and the hydrostatic pressure from without.

This time, as the lock was dewatered for the third time, the paraplastic burst out of the seams along with much of the underlying sponge rubber.

Again a round-the-clock race to waterproof the giant joints began. On the advice of the A. C. Horn Co., a subsidiary of Sun Chemical Corp., a liquid polymer synthetic rubber compound was tried. Called Hornflex-Thiokol LP 32, the material is normally used to fill cracks in swimming pools and masonry. Primarily designed for cracks no larger than one-half inch, the Corps' "swimming pool" had "cracks" 5 in. wide in concrete several feet thick.

Another problem was the curing time. The compound normally is applied in thin layers and allowed to air cure for ten days.

Considering the shipping detours



Gaping joints let in delta mud.

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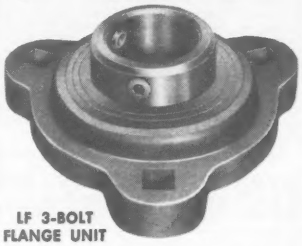

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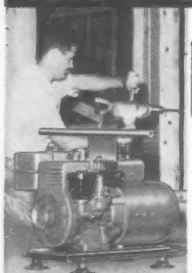

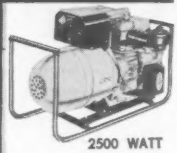

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and lost revenue, the Corps could not afford this prolonged curing time. Consequently the company worked out a special formulation that required only two days to cure. This development made it possible to complete the caulking job in three weeks.

The horizontal joints were first flushed out with hoses and then partially filled with asphalt. Next a 4-in. layer of cork was installed. Finally, the polymer compound was hand applied, in 1-in. layers, until it was built up to 4-in. thickness. A metal sheathing was then placed over the joints to protect the sealant from keel scraping.

Vertical joints were treated in much the same manner, except that metal backstops were installed in the joints first. Then a deep layer of fiber board was installed. Here also, the final sealer was the 4-in. layer of synthetic rubber compound, which was protected from hull abrasion with metal sheathing.

CAVERNOUS JOINTS were filled part way with asphalt and cork before final 4 in. of polymer was installed.

The Corps of Engineers reports that after five months of operation the lock shows no sign of leaking.

Corps' crooked creek below McNary Dam makes . . .

Spawning Salmon Feel at Home

For the last three years the Walla Walla District Corps of Engineers has been counting Chinook salmon.

In 1957, with Washington State fish and wildlife biologists, the Corps built an artificial spawning station downstream from McNary Dam on the Columbia River (ENR Jan. 2, 1958, p. 54).

The purpose was to explore the feasibility of diverting the ambitious Chinook from its quadrennial upstream race into a man-made spawning basin.

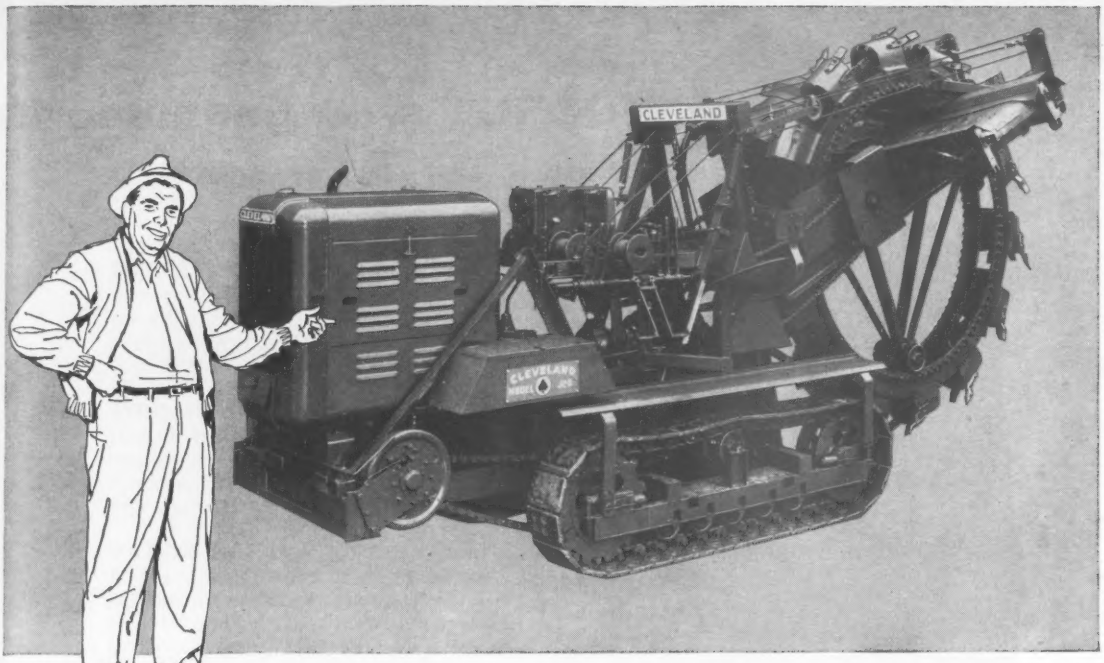
The construction of expensive and sometimes impractical fish ladders may someday be unnecessary if the fish propagate in the basin (as they have so far) and, more important, if the fingerlings of spring 1958 complete the four-year cycle and return to these same spawning grounds.

Accurate counts have been made in both 1958 and 1959 of adult salmon spawning in the basin and of fingerlings released. Some adults voluntarily entered the channel while others were trapped at the dam and hand-planted. Results were good enough to demonstrate the Corps' ability to duplicate the proper environment for the fish.

The big test will come next year when the first offspring hatched under artificial conditions begin migrating upriver. Meanwhile, important accessory information has been gained.

The Corps believes the controlled spawning system will cut the mortality rate of fingerlings. Under the present system of passing the fish over dams and then back downstream, many young salmon are lost to predatory fish that congregate at spillways and outlets.

By releasing the young fish at night when predatory fish do not feed, losses would be considerably reduced.



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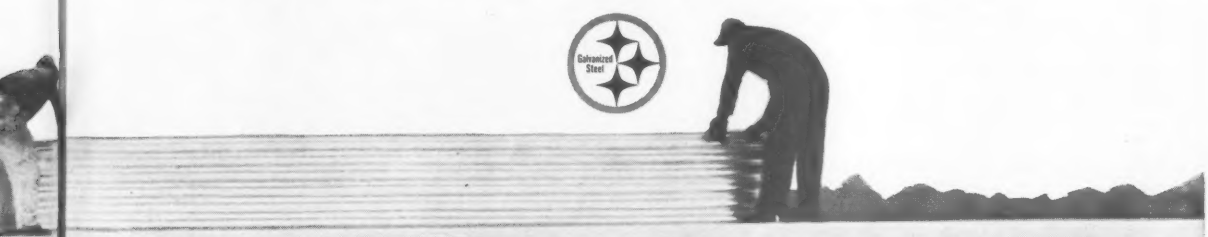

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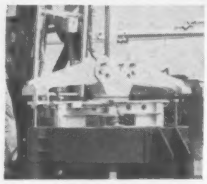
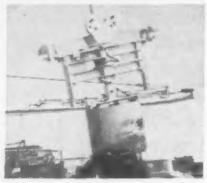
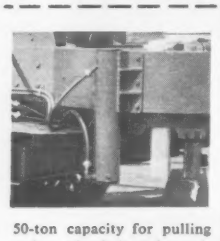


Hydraulic down pressure (50,000 lbs.) for faster digging in hard substrata.

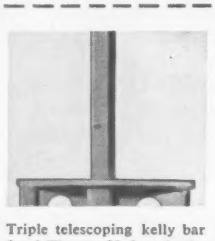


Hydraulic dumping arm for faster, safer dumping.

Hydraulic operated outriggers (box type).

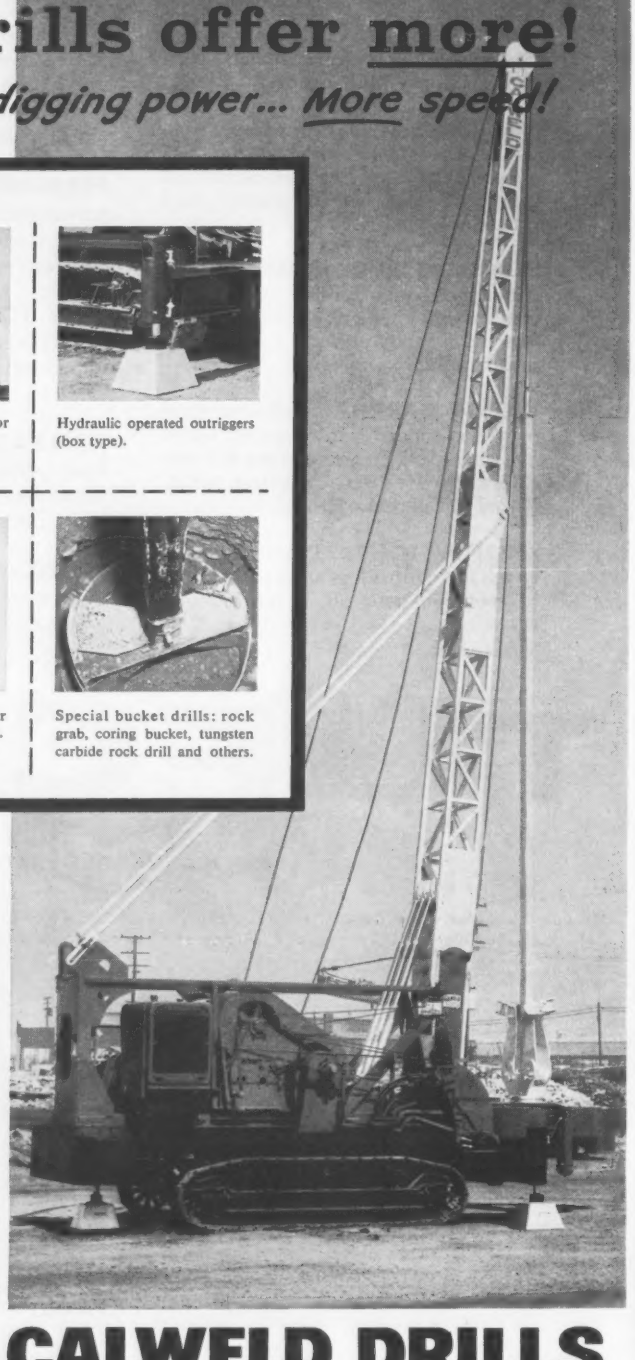


50-ton capacity for pulling casings using hoist and crowder hydraulic rams.



Triple telescoping kelly bar for drilling to 90 foot depth.

Special bucket drills: rock grab, coring bucket, tungsten carbide rock drill and others.



In a class by themselves—Calweld Drills are BIG and do a *big* job—drill any size hole from 10 inches to 10 feet in diameter and 200 feet deep.

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Cat Announces Line of Wheeled Loaders

Production of the Traxcavator No. 944, first of an all new line of wheeled loaders, has been announced by the Caterpillar Tractor Co.

(This entry of Cat's into wheeled loaders was predicted in ENR, Mar. 10, p. 17.)

The manufacturer says it has been designed from the ground up. The No. 944 carries a two cu yd bucket as standard equipment. It is available with either a gasoline or diesel power plant and both engines are rated at 105 net horsepower.

One of the features of the machine is the positioning of the lift arms and the hydraulic cylinders so that they are ahead of the operators compartment regardless of bucket height.

The dumping reach of the Traxcavator No. 944 is 31.75 in. with the bucket at its maximum dumping height of 9 ft 2 in. The bucket tip-back angle at ground level is 41 deg; at maximum lift it is 50 deg. Hydraulically operated automatic bucket positioner and lift kick-out are standard equipment.

The power train of the No. 944 includes a torque converter and a planetary power shift transmission. This transmission is a two speed forward and two speed reverse unit. It contains four in-line gear trains, each with a separate clutch. Two of the trains are for direction control; the other two for gear speed selection. There is also a manually operated range selector transmission that puts the machine in a four wheel drive work range or a two wheel drive travel range.

TRAXCAVATOR No. 944 carries a 2-cu yd standard or rock bucket.

Reverse speed travel is 25% faster than forward speeds in the same range. Braking is air boosted, steering is hydraulic.

Several attachments are available for use with the Traxcavator No. 944. Included is a 2-cu-yd side dump bucket that extends 20 in. to the outside of the left front wheel and permits dumping with a minimum of machine movement. Also available is a 3-cu-yd bucket for handling materials weighing less than 2,000 lb per cu yd. To maintain ground clearance for dumping, the extra capacity of this bucket is obtained by an increase in its width, not depth.

A 2-cu-yd rock bucket, similar to the standard bucket but with added reinforcing, is also available, as is a lumber fork with adjustable tines.

For operator safety and comfort, and for all-weather operation, there is a fiberglass cab with double strength safety glass and windshield wipers.

Later this spring two other wheel Traxcavators will be available. They are the No. 922 and the No. 966. The No. 922 will have a 1.25-cu-yd bucket, 134-in. lift, 38-in. maximum reach at 7-ft clearance, and a top speed of 32.2 mph. It can be powered by either a four cylinder turbo-charged diesel or a six cylinder gasoline engine. The No. 966 will carry a 2.75-cu-yd bucket, have a maximum lift of 154 in., a 37¾-in. reach at 7 ft, and a top speed of 27.5 mph. A six cylinder diesel engine will supply power. CATERPILLAR TRACTOR CO., PEORIA, ILL.

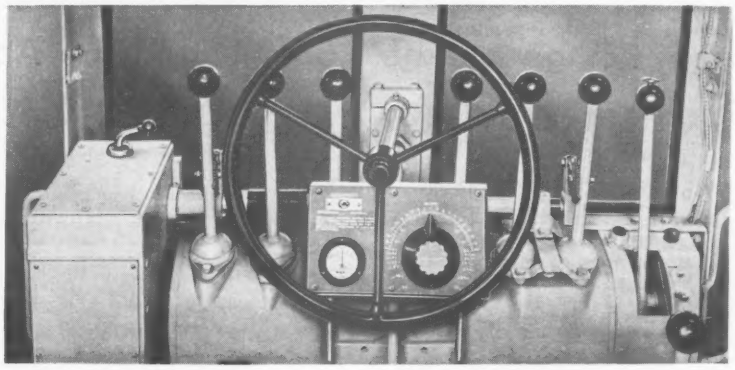
L-W Graders Have Preco Blade Control

The Preco "all-transistor" Dial-A-Slope automatic blade-control can now be installed on LeTourneau-Westinghouse motor graders.

The manufacturer states that use of this accessory in every operation from roughing in to finishing can increase the productivity of the motor grader as much as 50%, depending on the application. The automatic control frees the operator from the necessity of constantly adjusting both left and right blade lift levers in order to maintain the proper degree of transverse blade slope.

With the Dial-A-Slope control in operation, the operator needs to watch only one end of the blade and operate the lift lever which controls it; the other end automatically takes care of itself, maintaining the blade slope the operator has preselected. The result is that the operator can concentrate his entire attention on steering and regulating depth of cut.

To put the Dial-A-Slope control in operation, the operator switches on the control, sets the specified degree of slope on a dial, and turns a lever to select the end of the blade which he wants to have under automatic control (usually the heel). From then on, until he changes the setting on the dial, the automatic control electronically maintains the blade at the slope the operator has selected. As he manually raises and lowers the toe of the blade the transverse slope is cut to an accuracy of $\frac{1}{10}$ of 1%.



AUTOMATIC grade controls are easily accessible to grader operator.

With the automatic control, the operator can carry the slope all the way across the width of the grade from one row of stakes, thus eliminating the need for intermediate staking. LETOURNEAU-WESTINGHOUSE CO., PEORIA, ILL.

Brief unloading time was all the rest allowed Mack tractor before starting the 200-mile return run to the plant for another load. Each Newcrete beam was 30 inches square, 45 feet long and weighed 14 tons.

Giant bridge beams ride through the Appalachians

From Roaring Springs to Shinglehouse

A bridge construction job at Shinglehouse, Pa., called for on-schedule delivery of 60 pre-stressed Newcrete concrete beams—each 45 feet long and weighing 14 tons. From its plant at Roaring Springs, New Enterprise Stone & Lime Co., Inc., sent its B-83 Model Mack six-wheel tractor 200 miles over some of the most rugged mountains in the east with two giant beams at a time. After each delivery, the empty unit hurried back to the plant, reloaded, took on a new driver and started another 200-mile grind to the job site. The Mack tractor took the day-in, day-out pounding of the 30 grueling round-trips in stride—delivering all 60 bridge members right on schedule.

Macks have the stamina to deliver top-capacity loads in record time—day after day, month after month—with minimum upkeep requirements . . . the power that makes light work of steep grades and rough terrain . . . the positive traction—provided by Mack's Balanced Bogie with Power Divider—needed for sure-footed hauling through mud, sand, gravel and snow.

You'll find Macks are favorites on any heavy-duty trucking job because they put in more days on the job, with less downtime and greater operating economy. Why not run the best-performing, most economical, longest-lived truck there is? Your Mack branch or distributor is the man to see. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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FIRST NAME FOR
TRUCKS

MACK for over 7 straight years NO. 1 by far in sales of diesel trucks

7500

Men and Jobs

USC Names New Dean At Engineering School

Alfred C. Ingersoll, a civil engineer on the faculty of the California Institute of Technology for the past ten years, is the new dean of the University of Southern California's school of engineering.

A native of Madison, Wis., Dean Ingersoll has three civil engineering degrees from the University of Wisconsin, where he also taught for four years. He has also been an engineer for the Linde Air Products Co., Tonawanda, N. Y.

Dean Ingersoll is the co-author of "Fluid Mechanics" and "Heat Conduction with Engineering and Geological Applications." In 1954 he was guest professor at Bengal Engineering College in India.

He also did research for the Hyperion sewage treatment plant and the hydraulic design for the artificial waterfall on the Fort Moore memorial in downtown Los Angeles.

Consulting Firm Formed For Construction Planning

M. H. Slocum and H. H. Roberts have formed a partnership as construction consultants to be called Slocum and Roberts with offices in Lakewood, Ohio, and Alhambra, Calif. Their services will include heavy construction investigations, planning, estimates and bidding, plant layout and management.

Harvey Slocum, one of the best-known dambuilders of the past quarter century, is currently completing Bhakra Dam in India. Harrison Roberts, formerly vice president and general manager of Intrusion-Prepakt, has just completed a power survey in Argentina and is now consulting on Tarbella Dam in Pakistan. They previously worked together in the construction organization for Bull Shoals Dam in Arkansas.

Careers

Adm. Ben Moreell has been elected a director of Baltimore Contractors, Inc., Baltimore, Md. Admiral Moreell retired last year from the Jones & Laughlin Steel Corp., where he had served since the war in top executive positions, including president and chairman of the board. An officer in the Navy's Civil Engineer Corps for 30 years, Admiral Moreell was the wartime chief of the Bureau of Yards & Docks and originator and head of the Navy's Seabees.

E. H. Nunn has been reelected president of the Maryland Highway Contractors Association.

The South Carolina Chapter of the American Institute of Architects has named **Homer D. Blackwell** as its new president.

Arthur C. Volk, of Casper, has been named president of the Wyoming Society of Professional Engineers.

The Consulting Engineers Council has announced the election as president of **Hueston M. Smith,** industrial engineer and partner in the St. Louis consulting firm of Smith-Hanlon-Zurheide-Levy, Inc.

John H. Swanberg, chief engineer, Minnesota State Highway Department, is the new president of the Mississippi Valley Conference of State Highway Departments, succeeding **Walter Johnson,** Kansas state highway engineer.

In the Corps of Engineers, these changes: **Col. Robert R. Robertson** will be assigned as deputy Division Engineer, South Pacific Division. Colonel Robertson's present position as Chief of the Technical Liaison Division, Office of the Chief of Engineers, in Washington, D. C. will be filled by **Col. Stanley T. B. Johnson** who is moving from District Engineer at Baltimore. Col. Stanley T. B. Johnson is not to be confused with his successor at Baltimore, **Col. Warren R. Johnson. Col. John U. Allen** will be assigned as District Engineer for the Corps at Washington, D. C.

Donald F. Roach has resigned as soils engineer for the State Public Works and Highway Department of New Hampshire to join the engineering staff of the U. S. Department, Bureau of Public Roads in Monrovia, Liberia.

Samuel M. Baily, present chief of the engineering division of the Army Corps of Engineers, has been appointed as federal representative to the Wabash Valley Interstate Commission. The newly formed commission is designed to work on flood control and commercial development of the Wabash River Valley.

Clarence Rawhouser has been named by the United Nations Technical Assistance Operations as hydroelectric engineer to work in Ceylon.

John R. Teerink, hydraulic engineer for the California department of water resources, has moved up to head the department's Southern California District office in Los Angeles.

Hatton D. Peddicord is the new assistant District Engineer in charge of construction for District Five of Maryland's State Roads Commission.

John J. Vander Tulip will become chief engineer of the Texas State Board of Water Engineers. Mr. Vander Tulip succeeds **H. A. Beckwith.**

Proved Cost Saver

CURE and SEAL CONCRETE WITH 1 PRODUCT

THOMPSON'S WATER SEAL

Eliminates wet sacks, papers, hosing and spraying

Spray deep penetrating, colorless Thompson's Water Seal on fresh concrete to cure and seal in one operation. Save time . . . save labor.

Effectively controls moisture loss for 28 days and beyond.

Assures uniform curing even in hot, dry weather.

Helps reduce checking, cracking, spalling.

Produces harder, dust-free surface.

Eliminates waterproofing concrete floors.

Permits adequate time for smooth troweling.

Send for technical bulletin and Contractors Case History file.

A proved bond breaker for pre-cast, tilt up and lift slab construction. Permits easy, clean separation of slabs, walls, pre-cast members.

Available in 5 and 55 gallon drums from building supply stores, paint and hardware dealers.

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MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929

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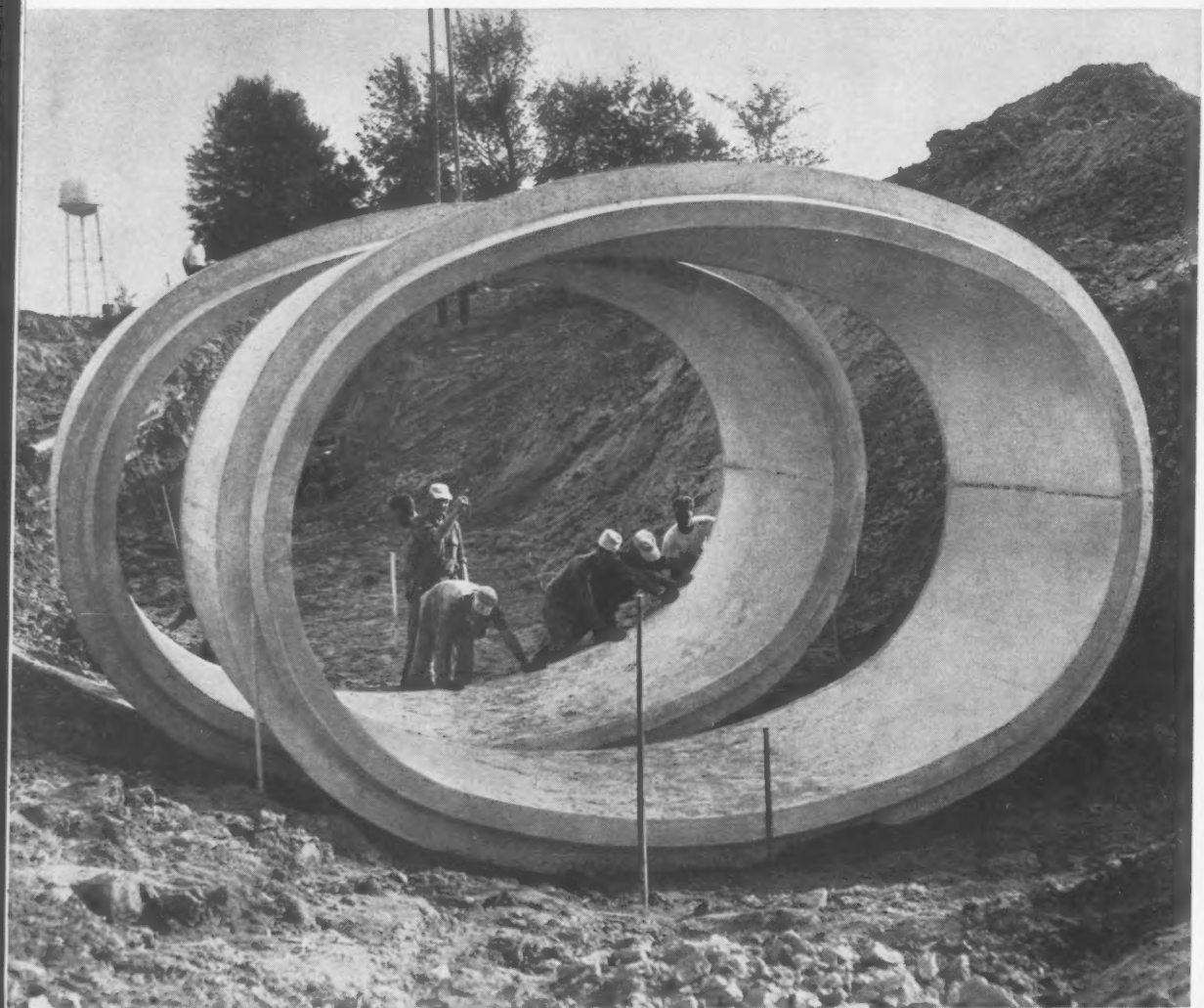
San Francisco • Los Angeles • San Diego • Portland • Chicago • Seattle • Denver • Dallas Houston • St. Louis • St. Paul • Detroit • Philadelphia • New York City • Memphis • Cleveland • Factory: King City, California

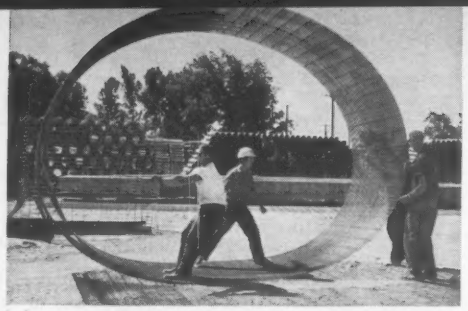
USS American Welded Wire Fabric selected to



This is a 6-foot section of 144" elliptical concrete pipe. It has a greater flow capacity than its equivalent in round pipe and it can be installed in a minimum depth of cut with increased depth of cover. Elliptical pipe saves headroom—allows sufficient cover to reduce frost heave.

Lamar Pipe & Tile Division, American-Marietta Company, Grand Rapids—Pipe Manufacturer

L. W. Edison Company, Grand Rapids, Michigan—Contractor



USS American Welded Wire Fabric conforms perfectly to the elliptical shape of the 144" pipe. Because of the machine prefabricated accuracy of USS American Welded Wire Fabric, cages can be formed faster, and the spacing and concentricity of cages can be accurately controlled.

strengthen concrete pipe on Michigan Highway job

The Michigan State Highway Engineers faced a problem when it came to the selection of pipe for an important new highway in Berrien County. Hydraulic and grade line considerations dictated pipe with maximum water-carrying capacity with a low flow line, but with up to 33 feet of back fill. They selected over 1,000 linear feet of elliptical, reinforced concrete pipe. Diameters varied from the smallest to the largest—18" to 144".* Lamar Pipe & Tile Division, American-Marietta Company, manufactured the pipe.

In the case of the 480 feet of 144" required to withstand 33 feet of backfill, the specifications required 3 lines of reinforcement—an inner and outer cage each having 0.754 square inches per foot, and an elliptical cage having an area of 1.508 square inches per foot. Lamar Pipe & Tile elected to use American Welded Wire Fabric on this big job.

Concrete pipe manufacturers insist on quality reinforcing, meeting rigid specifications—that's why so many of them use USS American Welded Wire Fabric. This quality product—with its machine-made accuracy, assures the proper distribution of steel because the wire diameters are held to the close tolerance of ±0.003" and their spacing may not vary by more than ¼" center-to-center. This prefabricated product is more accurate than other forms of reinforcing. Its cold-drawn, high-tensile steel wires have a minimum yield point of 60,000 psi and a minimum ultimate strength of 75,000 psi. For more information, write to American Steel & Wire, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

*Round equivalent

USS and American are registered trademarks

To increase the strength of the pipe, by resisting diagonal tension, 320 ¾" diameter stirrups are attached through the three cages of USS American Welded Wire Fabric.

American Steel & Wire Division of United States Steel

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors
Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors
United States Steel Export Company, Distributors Abroad

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best small compressor buy on the market

Costs much less than an "85" and is a better size for "one breaker" work.

Runs a heavy 80 lb. breaker at top efficiency (90 psig at the tool).

Always easy to start, because it's a rotary. No piston drag. Also smoother, cooler running than any reciprocating compressor.

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Obituaries

Alexander Haring, 88, retired professor of bridge and railway engineering at New York University.

Charles C. Egbert, 85, former Niagara Frontier State Parks Commissioner. Mr. Egbert was a pioneer in design of hydroelectric power generating facilities.

George Hefele, 86, retired chief of the Bureau of Bridge Operations of the New York city Department of Public Works. Mr. Hefele designed many of the City's bridges and was the author of a textbook on moving bridges.

William F. Farnham, 51, a partner in the Harrisburg, Pa., bridge designing firm of Modjeski & Masters.

William G. Sloan, 84, former state highway engineer of New Jersey, 1923-1929 and 1933-39. Mr. Sloan entered on his highway job after being a partner in a contracting firm, and after leaving public service became a consulting engineer. During his first period as state highway engineer, the New Jersey road program was the most spectacular in the nation. It included construction of the Pulaski Skyway and the other approaches to the Holland Tunnel and later the approaches to the George Washington Bridge.

Harold Lindsay, 65, partner in the Toronto architectural firm of Govan, Ferguson, Lindsay, Kaminker, Langley & Keenleyside. Mr. Lindsay was known for his specialty in hospital architecture.

John H. Schurman, 46, president of The Schurman Co., a Huntingdon, W. Va., construction firm.

Collins Wight, 74, retired consulting engineer and former superintendent of the Dayton, Ohio, waterworks. During World War II, he was manager of the Dayton office of the Office of Production Management.

Henry S. Miller, 63, director of streets for St. Louis. Mr. Miller was a city employee 34 years.

Charles Mannel, 72, retired civil engineer of Asheville, N. C. He has done hydraulic and hydroelectric work with the late Charles A. Waddell and Morrison-Knudson Co.

William D. Fote, Sr., 70, retired New York roadbuilder and general contractor. Prior to his retirement in 1954, he contracted public works in his home state.

GUARANTEE SPECIFICATION COMPLIANCE WITH HORNCURE

concrete curing compounds

✻ **Horncure 30:** 100% Resin Base Compound; complies with ASTM Specification C-309-53T. Paints or flooring adhesives can be applied over concrete cured with Horncure 30 after proper surface preparation.

✻ **Horncure 40:** White Pigmented Concrete Curing Compound guaranteed to comply with U. S. Army Specification CRD-C-300-55; meets or exceeds most Federal, State, Municipal specifications for white pigmented curing compound.

✻ **Horncure 50:** Wax Resin Base Compound guaranteed to comply with Navy Specifications No. 13yd and NAV docks Typical Specification Jib., Jul. 1945, Addendum #1, Mar. 1951; plus American Assn. of State Hwy. Officials Specification AA-540-148.

✻ **Horncure 60:** Wax Resin Base Compound guaranteed to meet most municipal specifications.

A. C. Horn offers one or more concrete curing compounds for every application, interior or exterior, horizontal or vertical, above and below grade.

For condensed data, see Sweet's or, write to Dept. ENR-123.

A. C. Horn Companies
SUBSIDIARIES & DIVISIONS
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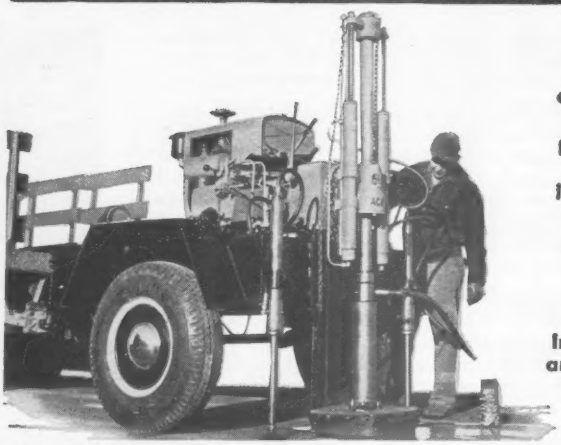
NEW PORTABLE PAVEMENT DRILL BY ACKER

SPEEDS HIGHWAY CORE TESTING

65 CORES A DAY WITH HIGH SPEED ACKER DIAMOND BIT



- Full 360° angle drilling
- Hydraulically operated leveling jacks
- Adjustable core barrel guide
- Integral pump and 100 gallon water tank

In routine operation, Acker's new highway test core drill using special Acker thin-wall diamond bits is producing 65 or more quality test cores per 8 hour shift.

Trailer mounted for portability, this new rig features a 100 gallon water tank and pump; a new built-in core barrel guide that saves time; hydraulic leveling jacks that simultaneously level the rig regardless of road contour; and dozens of valuable, exclusive features.

Write today for Bulletin 32. ENR

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Over 40 years of experience manufacturing a complete line of diamond and shot core drills, accessories and equipment.

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Air Conditioning

70,000 feet of time-tested galvanized **steel pipe** will serve Detroit far into the 21st Century

In the new multi-million dollar Cobo Hall and Convention Arena in Detroit's civic center, galvanized *steel pipe* is used for water, drainage and vent systems. The reasons why?

1: Longer lengths of *steel pipe* meant fewer joints with commensurate installation economies. 2: Water, drainage and vent lines of *steel pipe* required less support. 3: Threaded joints on *steel pipe* made plumbing and aligning easier and quicker. 4: Low cost, durable *steel pipe*, with its built-in strength, will efficiently serve the millions of people who will use these quarters for conventions, exhibits and spectator sports for generations to come.

Steel pipe remains the first choice in outstanding buildings throughout the country. It is dependable, reliable and low in cost for gas, air and water transmission, fire sprinkler systems, electrical conduit, structural uses, radiant heating, snow melting, refrigeration and cooling . . . and it has always been easily and readily available anywhere in the country.

90% of domestic water, drainage and vent lines require horizontal suspension. Because steel pipe is easy to install and needs less support, significant economies are effected in installation.

STEEL PIPE IS FIRST CHOICE

- Low cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
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- Available everywhere from stock

Insist on MADE IN U S A Steel Pipe

60-3

COMMITTEE ON STEEL PIPE RESEARCH
150 East Forty-Second Street, New York 17, N. Y.

Newell Dam, California, Bid Three Ways

Santa Cruz, Calif., took bids on three alternate crest elevations for its Newell Dam, on Newell Creek 1.5 miles from Ben Lomond. Creegan & D'Angelo, San Jose, Calif., is the consultant.

The award at $1,576,776, to Williams and Burrow Contractors, Inc., Belmont, Calif., low bidder on all three alternates, was on the highest crest alternate, as shown by this comparison of their bids:

Alt.	Dam Constructed to Crest Elev.:	Bid	% under Engr. Est.
A	590 ft	$1,576,776	−1.69
B	580 ft	1,462,130	−0.87
C	570 ft	1,332,977	−0.08

Work includes construction of the dam, spillway, outlet works and appurtenances; a 24-ft-wide surfaced access road about a mile long, with a reinforced concrete access bridge having three 45-ft spans and a roadway width of 26 ft.

The dam will be an earth and rock structure rising approximately 195 ft above the stream bed, and containing approximately 1,200,000 cu ft of embankment material.

The outlet works consist of a multivalve intake tower and approximately 1,330 lin ft of 36-in. ID concrete-encased conduit. The spillway is a concrete-lined chute type, with terminal flip bucket. River will be diverted during construction by use of outlet pipe.

Prevailing wages include: carpenter, $3.58; power shovel and/or other excavating equipment with shovel-type controls, $4.16-$4.27; tractor operator, $3.79; common laborer, $2.835.

The thirteen bids on this dam included:

1C	Williams & Burrows, Belmont, Calif.	$1,576,776
2	Granite Constr. Co., Watsonville, Calif.	1,610,989
13	Frederickson & Watson Constr. Co., Oakland, Calif.	2,435,490
EE	Creegan & D'Angelo, St. Jose, Calif.	1,604,000

Bids: 3-1-60 Items	Unit	Quantity	Unit Prices 1C	2
Camp & utilities	ls	job	$8,000	$20,000
Crk divrsn & wat handling	ls	job	9,000	19,000
Bronze tablet	ea	1	320.00	500.00
Dam stripping	cy	46,000	1.20	0.70
excavation	cy	188,000	0.65	0.70
Grout holes, 0 to 50'	lf	2,800	2.40	2.40
50 to 100'	lf	720	2.40	2.40
pipe	ea	90	8.60	8.00
Pressure grouting	sa	1,770	4.30	4.50
Upstream random D. E.	cy	155,000	0.37	0.50
pervious D. E.	cy	264,000	1.10	1.15
Impervious core D. E.	cy	379,000	0.52	0.50
Downstream random D. E.	cy	423,000	0.37	0.32
Dam rock french drain	cy	13,200	4.60	5.50
filter material	cy	4,430	3.50	6.00
abutment drain pipe	lf	785	1.80	3.00
Spillway excavation	cy	202,000	1.00	0.65
stripping	cy	22,000	0.60	0.65
gravel drains	lf	1,600	2.00	2.70
reinf steel	t	103	240.00	250.00
floor anchor, stl pin	ea	30	21.00	7.50
concrete post	ea	70	9.90	9.00
Concrete spillway weir	cy	210	32.00	42.00
spillway slab	cy	800	40.00	40.00
retaining & side walls	cy	710	45.80	85.00
bucket	cy	45	32.40	53.00
Spillway bridge superstruc.	ls	job	6,000	10,000
Outlet conduit, 36", exc.	cy	200	5.70	2.50
30", exc.	cy	60	5.50	7.50
Conduit liner, 36"	lf	1,330	27.60	27.00
30"	lf	100	51.00	48.00
Intake tower conduit, 24"	lf	390	31.00	30.00
Reinf stl, outlet works	t	72	240.00	250.00
Concrete, "A", lift	cy	420	43.00	37.00
36" outlet conduit	cy	810	30.00	43.00
30" outlet conduit	cy	100	35.00	50.00
Intake tower	cy	240	50.00	66.00
Closure	ls	job	720.00	2,000
Miscellaneous iron	lb	26,000	0.50	0.35
Control house	ls	job	5,000	5,000
Mechanical work	ls	job	20,000	20,000
Roadway clear & grub	ls	job	9,707	25,000
excavation	cy	23,700	0.70	0.45
embankment	cy	4,160	0.45	0.25
60" CMP	lf	65	41.82	40.00
30" CMP	lf	150	14.00	20.00
24" CMP	lf	85	11.40	13.00
15" CMP	lf	40	7.70	7.00
reinf conc headwalls	cy	10	120.00	100.00
rock base	cy	2,900	3.00	4.50
plant-mixed surfacing	sf	110,000	0.09	0.08
berm	lf	4,400	0.50	0.40
sacked concrete riprap	cy	25	42.00	50.00
markers	ea	60	7.75	7.00
guardrail	lf	450	4.30	5.00
Bridge, reinf concrete	ls	job	42,171	50,000

Commence: 3-16-60. Complete: 11-15-60.
Liquidated damages: $200/day

Science Building Costs $21.74 per Sq. Ft.

A science building in Milwaukee for the University of Wisconsin will cost $21.74 a sq ft and $1.59 a cu ft. Grellinger & Rose, Milwaukee, is the architect. A. L. Small, University Planning & Construction, Madison, is the supervising engineer.

This is a five-story and basement building, with a gross area of 124,186 sq ft and a cube of 1,697,452 cu ft. Assignable area is 76,600 sq ft.

The building contractors are:

General Huntzinger Constr. Co., Milwaukee	$1,322,908
Plumbing, Heating & Ventilating J. E. Robertson Co., Milwaukee	556,701
Electrical work Herman Andrae Electric Co., Milwaukee	196,410
Elevators Elevator Engineering Co., Milwaukee	37,990
Lab. furniture & equipment Milwaukee Equipment-Hamilton, Milwaukee	210,370

The total construction costs, $2,699,381, break down like this:

Feb. 1960	Contract Costs	% of Cost Bldg.	% of Cost Total	Avg. Cost per sq ft	Avg. Cost per cu ft
Size				124,186	1,697,452
General contract	$1,322,908	56.9	49.0	$10.65	$0.779
Plumbing	237,701	10.2	8.8	1.91	0.140
Heating & vent.	319,000	13.7	11.8	2.57	0.188
Electrical	196,410	8.5	7.3	1.58	0.116
Elevator	37,990	1.6	1.4	0.31	0.022
Fixed equipment	210,370	9.1	7.8	1.70	0.124
Total Bldg. Constr. Cost	$2,324,379	100%	86.1%	$18.72	$1.37
Movable equipment	93,000	.....	3.5	0.75	0.055
Utilities	20,000	.....	0.7	0.16	0.012
Architect	139,462	.....	5.2	1.12	0.082
Bur of Engr	20,000	.....	0.7	0.16	0.012
Landscaping	2,500	.....	0.1	0.02	0.001
Contingent	100,040	.....	3.7	0.81	0.059
Total Cost	$2,699,381	100%	100%	$21.74	$1.59

Self-leveling level saves up to 50% surveying time

The Ertel Level, proved successful throughout the United States, automatically assumes a truly horizontal line of sight once it has been approximately leveled by its circular bubble.

The self-leveling system consists of two carefully-positioned prisms which are moved by a gravity-operated pendulum to a precise realignment with any accidental change of instrument setting—such as one tripod leg sinking into soft soil. *During extensive leveling operations, the instrument cuts working time as much as 50%.*

The Ertel INA Level—made in West Germany—is 5⅛" high; has a 30x telescope; weighs 19¼ lbs. (including tripod). Write for Bulletin INA which gives complete data.

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Hydraulic & Mechanical
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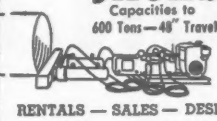
Capacities to 600 Tons—48" Travel



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You get most efficient design, lower cost components and fastest delivery on Barber-Greene standard or specially engineered systems

Here are reasons your materials ride for less when Barber-Greene solves any bulk material handling problem:

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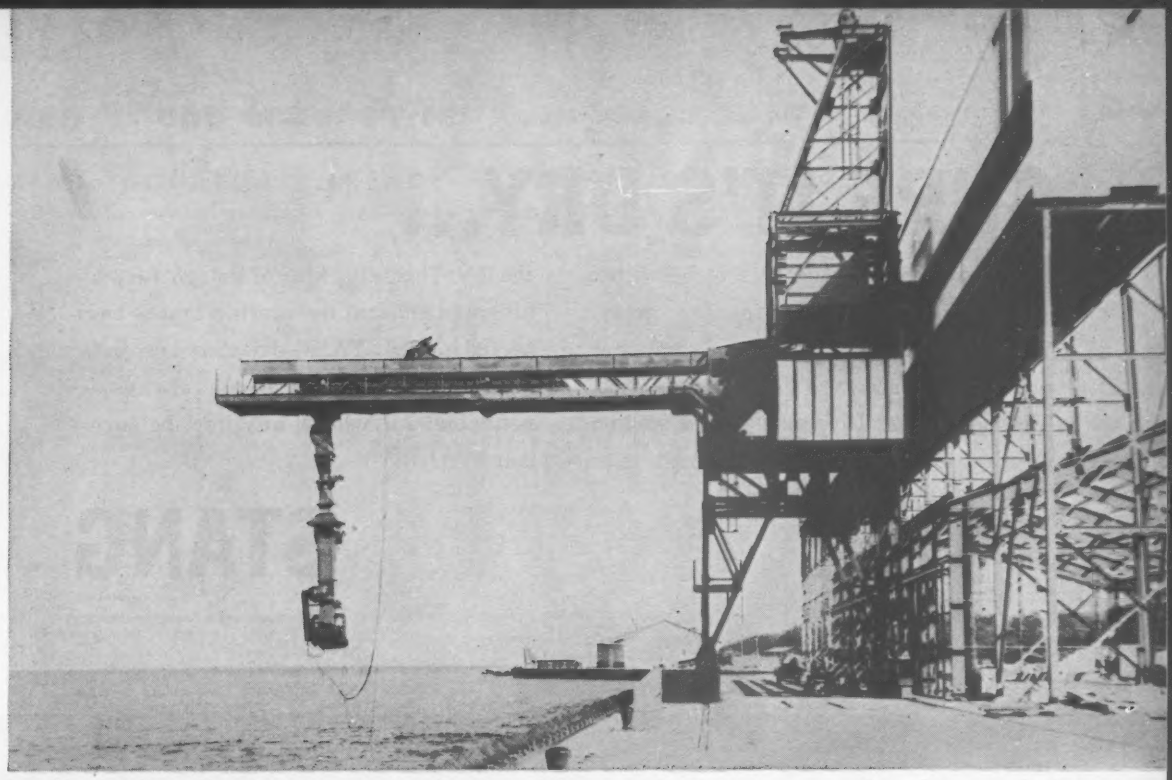
LOWER COST COMPONENTS—Your design savings are compounded by your savings on standardized conveyor components. Barber-Greene, pioneer and largest producer of these higher quality components, passes on to you, volume-production savings no other manufacturer can equal. That means that when your conveyor can be entirely built from standardized components, and most can, your savings are king-sized. Even if yours is a very special type of application, you still save because of Barber-Greene's vast experience in designing and building specially engineered conveyor systems.

NO TIME LAG—Barber-Greene standardized components take the urgency out of your conveyor emergency three ways: 1) faster quotation; 2) faster delivery; and 3) faster erection.

You can find out how much you'll save merely by calling your nearby Barber-Greene Conveyor Representative. He will quickly quote you money-saving prices on either your entire system or on whatever conveyor equipment you need. Call today.



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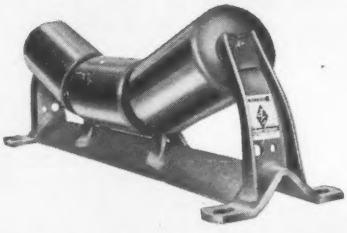
You can benefit from these savings whether your conveyor is fabricated from channel frame or giant gallery truss, whether capacities handled are a few hundred or thousands of tons hourly, or whether belt widths are 18 or 60 inches.



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SURE IT'S DRY...

And it's dry more than 15 feet below the level of the river, just a few feet away. What's more, there's an open end ramp that provides easy access to the excavated area. The Sioux River Diversion Dam is well on its way to completion, and the work is in the dry. This is the kind of thoughtful planning and efficient dewatering that is engineered into all STANG-dewatered projects: quick, clean, economical, and always dependable. Anywhere, anytime, be sure—call STANG.

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STANG

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OMAHA TACOMA MOBILE TULSA MINNEAPOLIS ST. PETERSBURG

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.,* truckload del.,* per block		CONCRETE Ready Mixed 1:2:4 del. per cy
	Paper	Bulk	Mortar	Gravel, 1½ in.	Gravel, ¾ in.	Sand	1½ in.	¾ in.	1½ in.	¾ in.	Sand grav.	Lt. wgt. agg.	50 cy & over
Atlanta	$4.38a‡	$3.88a‡	$3.68a‡	$3.10e‡	$3.10e‡	$1.85‡s	$2.18s	$2.33s	$1.65r	$1.75r	$0.175o	$0.21o	$13.75g
Baltimore	4.42a	3.91a	3.56a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.50ou
Birmingham	4.43c	3.40ef	....	2.53ns	2.53ns	2.13ns	2.75s	2.75s	1.65d	1.75d	.19	.19	14.25q
Boston	5.83ip	4.52ap	4.90imp	3.00qas	3.00qas	3.00qas	1.75qas	1.85qas	....	....	.23o	.275ao	15.00q
Chicago	4.52ag	4.02ag	4.15g	3.78‡e	3.78‡e	4.13‡be	3.95‡be	3.95‡be	2.25‡e	2.25‡e	.28‡e	26‡e	13.50e
Cincinnati	4.84c	4.34c	4.31c	2.29‡cu	2.34‡cu	2.44‡cu	2.51‡cu	2.74‡cu	1.80u	1.80u	.19o	25ao	15.00qr
Cleveland	4.77/.84‡	....	4.19‡ae	2.25ae	2.25ae	1.75ae	2.70fy	2.70fy	2.20‡f	2.20‡f	....	23f	17.25u
Dallas	3.65a	3.25a	3.53a	2.65‡a	2.75‡a	1.90‡	2.43	2.63	....	....	....	27	12.50x
Denver	4.89a	4.39a	4.89	1.95‡	2.15‡	1.42‡b	....	3.00‡x	....	....	.25	27ae	11.90
Detroit	4.50a	3.89aqq	3.97a	4.50‡abm	4.50‡abm	4.25‡abm	3.75‡abm	3.75‡abm	2.53aqaa	2.53aqaa	.24u	.27‡au	15.50eaa
Kansas City	4.52a	3.92a	4.30a	....	....	1.85‡a	2.00‡a	2.00‡a	....	....	.22a	.26c	14.00
Los Angeles#‡	5.12ch	4.68ch	5.60c	2.56‡a‡	2.76‡a‡	2.41‡a‡	2.46‡a	....	....	....	.19f	.305	12.46klz
Minneapolis	4.66a	4.15a	4.25a	2.70‡ae	2.70‡ae	1.60‡ae	3.95‡ae	3.95‡ae	....	....	.20g	....	14.30f
Montreal	3.36‡det	3.11‡det	3.72‡det	1.90‡a†	2.15‡a†	2.40‡a	1.90††	2.15††	2.00†	2.00†	.20†	.28††	10.80ek†
New Orleans	4.17b	3.65b	3.97b	2.61b	2.61b	2.16b	....	....	1.65d	1.75d	.29r	.39	14.00o
New York	4.68a	4.18a	3.75a	..	..	3.20bk	2.30bkw	2.29blbb	2.29blbb	....	....	.265nwo	.32bwo	17.60ay
Philadelphia	4.49‡ae	3.99‡ae	3.51‡e	1.95‡a	1.95‡a	1.55‡a	2.00‡a	2.30‡a	2.25‡a	2.25‡a	....	.225	.33	13 90e
Pittsburgh	5.65bjk	4.62bj	5.00bji	2.68‡aqv	2.68‡aqv	3.08‡aqv	2.00‡aqv	2.00‡aqv	2.10w	2.10w	.26rx	.26rx	16.15o
St. Louis#‡	4.54a	4.04a	4.24a	3.40‡as	3.40‡as	2.40/3.40‡as	1.75‡s	1.75‡s	....	....	.255‡o	.315‡co	13.65/14.10q
San Francisco	4.34c	3.79c	4.78c	2.02	2.02	2.12	2.17	2.17	....	....	.24	.28cl	13.00cw
Seattle	4.47‡a	3.75ag	4.65a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.324s	.45cs	14.70‡
Toronto	5.20i	3.84t	5.20i	2.40	2.40	2.05	2.40	2.40	2.40	2.40	.26	.285cu	13.75q

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax ## Add 2% intrastate sales tax. R Revised . † Plus 6% Mun & Prov tax.

CEMENT: *a Less 10¢ disc. 15 days. *b Less 2% disc. 15 days. *c Less 10¢ disc. 10 days. *d 10¢ disc. 20 days. *e Truckload lots. *f Fob mill, add $14.58 to $21.31 per car switching charges. *g fob mill + freight. *h LCL. *i Less 2% disc. 10 days. *j Truck lots, fob yard. *k 100 bag lots *l over 150 sacks. *m Sold in bags only. *n Less 5% disc. 30 days. *o Plus 50¢ for Sat. del. *p 5-8 ton truckload. *q F.o.b. mill *s In bags & bbl. Only *t min. 7 tons

SAND, GRAVEL, STONE & SLAG: *a Truck lots. *b Per cu. yd. *c 5 tons up. *d Less 5¢ disc. 10 days. *e Less 2% disc. 10th. *f Less 2% disc. 15th. *g Less 5% for cash. *h Less than 5 tons. *j F.o.b. quarry. *k Barge lots aed. *l F.o.b. scow Hudson river. *m Less 2% for cash. *n F.o.b. cars. *o F.o.b. yard. *r less 5% disc. 15th. *s Less 2% disc. 10 days. *t Less 10¢ disc. 10 days. *u Less 5¢ disc. 10 days. *v Less 2% disc. 15 days. *w Less 10¢ disc. 15 days. *x Incl. 35¢ switch. charge. *y F.o.b. dock. *z 5-8 tons. *aa Less 5% disc. 15 days. *bb Less 2% 25th of month

CONCRETE BLOCK: *a Cinder. *b Waylite. *c Haydite. *d Celocrete, *e 5¼ x 8 x 12 in. *f 8 x 4 x 16. *g F.o.b. truck at job. *i F.o.b. plant San Rafael. *m F.o.b. yard. *n 8 x 8 x 16. *o Less 2% disc. 10 days. *p Less 2% disc. 10th. *q Less 5% disc. 10th. *r Less 2% disc. 15 days. *s Less 2% disc. cash. *t Siporex, 7 x 8 x 16. *u Less 5% disc. 10 days. *v Less 12% disc. 15th.

READY MIXED CONCRETE: *a 6 cu yd or over del. Man. *b 25 cu yds or more. *c 10–100 cy. *d 1–3 mi. zone add 15¢ for ea. add'l 1-mi. zone. *e 3,000 lb comp. *f 2,500 lb. comp., less 5% disc. 30 days. *g Less 25¢ disc. 15 days. *h Less 50¢ for cash. *i 5% off for cash. *j 2% off for cash. *k Federal tax included. Add 8% mun. & prov. tax. *l 1:2½:3½ base price. *m F.o.b. yard. *n Plus escalator clause. *o Less 2% disc. 15 days. *p Less 50¢ disc. 15 days. *q Less 2% disc. 10 days. Add 50¢ per zone. *r 2000 wgt. *s Less 5% disc. 10 days. *t Incl. 50¢ heating. *u Less 2% disc. 15th. *v Sat. del.+50¢. *w 10-100 cy. *x Del in zone 20-B. *y less 25¢, 10 days. *z less 1% in 30 days. *aa 6 bag mix

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 50¢ per bbl., not refundable *Prices guaranteed through December 31, 1960*

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.55	Buffington, Ind	$3.55	Steelton, Minn	$3.60	Muskegon, Mich	$3.60	Toledo, O	$3.45
Cinchfield, Ga	3.55	Independence, Kan	3.35	Leeds, Ala	3.40	Saginaw, Mich	3.60	Milwaukee, Wis	3.50
Kingsport, Tenn	3.55	Hannibal, Mo	3.50	Duluth, Minn	3.45	Wyandotte, Mich	3.60	Green Bay, Wis	3.50
West Des Moines, Iowa	3.60	Northampton, Pa	3.50	Hudson, N. Y	3.50	Buffalo, N. Y	3.55	Ironton, O	3.55
Nazareth, Pa	3.50	Universal, Pa	3.60	Alpena, Mich	3.50	Oswego, N. Y	3.60	Montreal, Can	2.81
Bath, Pa	3.50	Waco, Tex. (+ 10¢ tax)	3.35	Detroit, Mich	3.60	Cleveland, O	3.65	W. Winfield, Pa	3.60
Lesley, Pa	3.50	Giant, S. C	3.55	Howes Cave, N. Y	3.50	Alsen, N. Y	3.50	Security, Md	3.50

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	e	e	e	$28.70PS	$45.00PS	$0.2740PS	$0.2858	$0.1308uS	$0.245uS	$0.1258S	$0.1328S	$0.245
Baltimore	e	e	e	21.00i	.....	.09i	0.18i	.09iwE	.18iwE	.095i	.10i	0.19i
Birmingham	.....	66.00i	.....	25.12	25.69O	.1060	0.1093O	.1162w	.1188Ow	.1006O	.1069	0.1093O
Boston	.....	.....	.....	22.00apS	46.00apS	22.00anS	46.00anS	.105awF	.22awF	.14aOR	.16OR	.....
Chicago	150.00‡a	95.00‡ab	3.95/4.00‡aj	22.00b	32.00b	20.40bv	30.40bv	.10bwH	.18bwH	.08b	.....	.....
Cincinnati	.....	.....	.....	26.00SU	.....	26.00ff	.....	.1165wSU	.....	.109	.1265	.....
Cleveland	.....	89.50‡d	6.30	26.00tA	.....	26.00tuA	.....	.1165wAF	.....	.....	.1265tA	.21A
Dallas	e	40/80p	e	26.90	46.35	.1138	.1983	30.50	52.45	.1100	.1138	.1983
Denver	.....	62.00a	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	119.00	.....	31.50R	.....	32.20uR	.....	30.24wIR	.....	27.84	.....	.24
Kansas City	e	e	e	18.00el	.....	18.00ex	.....	.0825cwJ	.....	.0791e	0.125x	.....
Los Angeles#	e	e	e	21.50dmx	.....	21.50dnx	.....	23.00dKx	.....	22.00dnn	28.90jXs	26.30jXs
Minneapolis	.....	.....	3.73h	23.70e	.....	.105w	.....	.105w	.....	0.05	.1375bb	.....
Montreal	e	e	e	30.50n	43.60n	.167n	.311n	17.80nuE	22.20nuE	.155n	.242n	.27nX
New Orleans	e	e	e	20.00e	.....	20.00ev	.....	.095ew	.....	.085eB	.095eBL	.1905eB
New York	.....	.....	3.70f	23.99mO	45.94mO	23.99wtO	45.94wtO	10.61wF	20.01wF	.....	10.68u	20.11u
Philadelphia	.....	.....	.....	21U	.....	21U	.....	.095U	.....	.095U	.....	.....
Pittsburgh	60.00k	95.00n	6.35n	31.20is	.....	31.20isv	.....	.1403‡S	.....	.14‡S	.1403i	.....
St Louis##	.....	.....	.....	19.74f	21.19	.1825f	.1825	.0890f	.0915fw	0.165f	.1825O	.30R
San Francisco	.....	70.00	.....	22.50gdd	41.00gdd	22.50gkdd	41.00gkdd	22.50gNdd	46.50gNdd	23.25gwWdd	23.50gXdd	.2023gXdd
Seattle	.....	.....	.....	24.00s	47.00h	33.00sec	38.50	25.50KE	.....	28.75hsY	25.80hsX	49.80hsX
Toronto	.....	139.00/‡	4.50f	38.90	59.01ee	0.2075	0.2773ee	0.222w	0.2704wee	0.233	0.212Zee	.268Zee

‡ Delivered. # Add 4% sales tax. ## Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: *a Less 2% disc. 10th. *b 3 x 3½ x 8. *c 2¼ x 8¼ x 4. *d Truckload lots. *e Not used. *f 2" interior 6 lb tr. *g Less $1/Mdisc. 15th. *h 2" tr, 8 lb. *i 3 x 3⅜ x 8½. *j 2¼", 6 lb. tr. *k Used. *l Redshale. *m Pine: oak $6.57. *n Truck del. *o Less $1/M disc. 15 days. *p Used: $40; new: $80.

ASPHALTS: *a F.o.b. refinery, Everett, Mass. *b F.o.b. refinery, Lockport, Ill. *c F.o.b. Sugar Creek, Mo. *d F.o.b. refinery, El Segundo. *e F.o.b. Baton Rouge. *f F.o.b. Hartford, Ill. *g F.o.b. refinery, Richmond, Calif. *h F.o.b. Martinez. *i F.o.b. refinery, Baltimore. *j F.o.b. refinery, Inglewood, Calif. *k 50-110 'penetr. *l Less than 100 penetr. *m 40/300 penetr. *n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. *o Drums not avail. Shipped in steel bbl. *p 60/70 penetr. *r In customer's drums. *s Shipped in drums, per drum. *t 150/300 penetr. *u Per 100 gal. *v Per ton. *w Per gal. *x Also tank trucks *y F.o.b. Oakland. *z F.o.b. Edmonds. *A F.o.b. refinery, Cleveland, *B F.o.b. Destrehan, La. *E RC. *F Also RC. *G Also MS *H RC 0–5 incl. *I MC 4. *J MC, RC $0.095. *K MC 3, 4, & 5. *L MS. *M MC 1–5, RC 1–5, $0.0918. *N MC 3. *O Truckload. *P F.o.b. refinery, Atlanta. *Q F.o.b. Eldorado, Ark. *R Delivered within 50 mi. *S Less 2% disc. 10 days, net 30. *T Less 1% disc. 10 days. *U F.o.b. refinery. *V Less 2% disc. 15 days. *W SC 2. *X RS 1. *Y SC 1. *Z Incl. 10% Sales Tax. *aa SC 3, 4, & 5. *bb RS 3. *cc In used drums. *ddl ess disc of $1 ton. ee 45 Imp. gal. drums *ff 60-150 penetration

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Apr. 21; Next, May 19.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Apr. 28; Next, May 26.
- Wage Rates, Building Board Insulation: Last, Apr. 28; Next, June 2.
- Iron & Steel Products, Pipe: Last, Apr. 14; Next, May 12.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

May 9 Connecticut — May 12 New Hampshire

BUILDINGS—BA

▲† **Me., Topsham**—HOUSING—BA 5/12—Base Procurement Office, Topsham Air Force Station, Brunswick, 177 units Capehart Housing, Topsham Air Force Station, IFB 17-612-60-2. $2,900,000. Extended date. Kelly & Gruzen, 10 Columbus Circle, New York, N. Y., archts.-engrs. CD 4/6.

▲ **Mass., Bridgewater** — SCHOOL — BA 5/14 — Bridgewater-Rayham Regional School Dist., Town Hall, Regional High School, Center and Mt. Prospect Sts. $2,500,000. Walter M. Gaffney Assoc., W. Main St., Hyannis, archts. Bid date changed. CD 4/15.

▲ **Mass., West Roxbury**—HOME FOR AGED—BA 5/24—Hebrew Home for Aged, 21 Queen St., Dorchester, Home for Aged, Centre St. $3,000,000-$4,000,000. Arthur Rosenstein, 184 Boylston St., Boston, and Krokyn & Krokyn, 184 Boylston St., Boston, archts. Goldberg, LeMossurier Assoc., 669 Boylston St., Boston structural engrs. CD 5/23/57.

HEAVY CONSTRUCTION—LB & CA

▲ **VERMONT**—State Hy. Dpt., State House, Montpelier, Bids opened 4/22,

Landers & Griffin, Inc., 800 Islington St., Portsmouth, N. H., and **Morrison-Knudsen, Inc.,** 150 East 42 St., New York, N. Y., (joint venture), LB **$2,593,873,** road and bridges, Waterbury-Bolton, Contr. 1, I-89-2(7). CD 2/10.

▲ **RHODE ISLAND**—State R. I. & Providence Plantations, Div. Purchases, State House, Providence, Bids opened 4/20,

M. A. Gammino, 728 Valley St., Providence, R. I., LB **$3,857,530,** Interstate Rte. 95, Bid No. 839, Contr. No. 6053, Fed. Aid Proj. 1-95-2 (3) 36, Providence Co. CD 4/5.

BUILDINGS—LB & CA

▲ **Associated Constr. Co.,** 1010 Wethersfield Ave., Hartford, Conn., CA **$12,562,000,** Medium Security PRISON, Proj. BI-DD-35-A, ENFIELD, CONN. State P. Wks. Comr., 165 Capitol Ave., Hartford, Conn. Bids Apr. 6. CD 4/8, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 10 Maryland — May 12 Pennsylvania

STREETS AND ROADS

May 10 Maryland — May 11 Delaware, New Jersey

May 12 Pennsylvania

BUILDINGS—BA

▲ **Pa., Phila.**—LIBRARY—BA 5/11—General State Auth., 18 and Herr Sts., Harrisburg, undergraduate library, seminar and classroom bldg. for University of Pennsylvania. $3,200,000, Plans deposit $100. Harboson, Hough, Livingston & Larson, Architects Bldgs., archts. A. F. Jones, c/o owner, ch. engr. CD 3/23.

▲ **N. J., Newark**—HOUSING—BA 5/19—Housing Auth. City of Newark, 57 Sussex Ave., one 11 story, seven 13 story, 1,680 units housing, W. Kinney, Howard, Broome, Mercer and Lincoln Sts., Proj. 2-19, $24,000,000. Wm. E. Lehman, 972 Broad St., archt. CD 4/7.

▲ **Pa., Harrisburg**—APARTMENTS—BA 5/19—Harrisburg Housing Auth., 404 City Hall, two 14 story, 252 units apartments, Verbeke, Basin, Sixth, and Wallace Sts. $3,500,000. Plans deposit $50. C. J. Lappley, Riverview Manor Apts., archt. CD 5/7/59.

▲ **N. Y., Brooklyn**—LAFAYETTE HOUSES—BA 5/24—New York City Housing Auth., Purchase Div., Rm. 1002, 299 Broadway, New York, Zone 7, fdns. and general constr., heating and ventilating work, electric work and plumbing work for Lafayette Houses Proj. No. NY 5-47, DeKalb, Franklin, Lafayette and Classon Aves., Brooklyn Boro. Plans deposit $75; furnishing, installation elevators for Lafayette Houses Proj. No. NY 5-47. Plans deposit $25. $13,000,000. CD 3/5/58.

▲ **N. Y., New York**—HOUSES—BA 6/9—New York City Housing Auth., 299 Broadway, Zone 7, Senator Robert A. Taft Houses, Section II, Proj. No. NYC-28, 672 units, Manhattan Boro. De Young & Moscowitz, 205 E. 42nd St., Zone 17, archts. CD 2/18.

▲ **N. Y., New York**—HOUSES—BA 6/21—New York City Housing Auth., 299 Broadway, Zone 7, Andrew Jackson Houses, Proj. No. NY5-43, 868 units, Bronx Boro. $14,000,000. Harry M. Prince, 101 Park Ave., New York 17, N. Y., archt. CD 11/27.

▲ **N. Y., New York**—HOUSES—BA 7/5—New York City Housing Auth., 299 Broadway, Zone 7, Gouverneur Morris Houses, Section I, Proj. No. NYS-37, incl. 1,085 units combined with Morrisania Houses, Proj. NYS-48A, incl. 206 units, Bronx Boro. CD 3/3/59.

▲ **N. Y., New York**—HOUSING—BA 7/11—New York City Housing Auth., 299 Broadway, Zone 7, Borgia Butler Houses, Proj. NY6-84, 990 units, Bronx Boro. $28,000,000. Joseph & Vladeck, 1841 Broadway, archts. CD 11/3.

▲ **N. Y., Fresh Meadows**—APARTMENT—Bids Asked—New York Life Insurance Co., 51 Madison Ave., New York 10 (selected list bidders), 21 story apartment. $2,500,000. Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., New York, N. Y., archts. CD 4/29/59.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**County Asphalt,** 129 Main St., Tarrytown, N. Y. CA **$727,688,** est. $804,000, b. conc. 6.68 mi. Walton-Downsville Pt. 1, SH 8515, Walton-Downsville, Pt. 2, SH 48-18, Rte. 205 FARC 60-23, Proj. S 44-(6), Delaware Co.;

N. Y.—**Depew Paving Co., Inc.,** 161 Woodlawn Ave., Depew, N. Y., CA **$553,378,** est. $629,000, b. conc. 1.18 mi. misc. work 0.05 mi. Williamsville Village, SH 5061 Main St. Pt. 2, SH 87, Rte. 5 FARC 60-19. Proj. F-933 (6), Erie Co.;

N. Y.—**Johnson Drake & Piper, Inc.,** 86 Trinity Pl., New York 16, N. Y., CA **$3,475,067,** est. $4,133,000. b. conc. 0.79 mi., misc. work 0.1 mi. grad. 1.85 mi. 4 hy. gr. sps. 1 br. comp. I-beams, 7 spans 371.0 ft., 1 sp. 76.5 ft., 1 sp. 86.4 ft., 1 sp. 72.1 ft., 2 sp. 136.0 ft. Rochester City, Innerloop (Front St. to North St.) Rochester Outerloop (Winton Rd. South-Highland Ave.) FAC 60-7 FASH 60-2. Proj. U-1089 (13) U 1093 (7), Monroe Co.;

N. Y.—**Zara Contracting, Inc.,** Hicksville, L. I., N. Y., CA **$3,492,637,** est. $4,110,000, Long Island Expressway from Round Swamp Rd. to Pinelawn Rd., grade, separation at Round Swamp Rd., Whitman Rd., Rte. 110 and Pinelawn Rd., Nassau and Suffolk Counties.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

Bids Mar. 17, awarded Apr. 9. Grand total $8,258,750. CD 3/18, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

Slattery Contg. Co., Inc., Oceania and 64th Aves., Maspeth 78, N. Y., CA **$2,671,952,** bridge substructure 0.29 mi., misc. work 0.02 mi., Interstate Rte. Conn. 511 (Cont. 1A) Cross Bronx Expressway (Alexander Hamilton Br. Substructure) FICBE 60-2, Proj. I-95-1 (38), Bronx and New York Counties. Bids Mar. 17. CD 3/18, under LB.

▲ **Emerson Garden Electric Co.,** 2903 Lockport Rd., Niagara Falls, N. Y., CA **$2,678,337,** transmission line from Niagara Switchyard to Rochester, Niagara Power Proj. AL5, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Apr. 14. CD 4/18, under LB.

▲† **Westinghouse Electric Corp.,** 2415 W. Franklin St., Baltimore, Md., CA **$2,600,000,** tropospheric scatter communications sys. Girffiss Air Force Base, ROME, N. Y. Procurement Office, Griffiss Air Force Base, Rome, N. Y. CD 2/17/59.

▲ **PENNSYLVANIA**—Dpt. Hys., Harrisburg,

Central Pennsylvania Quarry Stripping & Constr. Co., Hazelton, and **Stabler Constr. Co.,** 635 Lucknow Lane, Harrisburg, Pa., CA **$3,792,901,** Scranton Interchange 3.22 mi. Penn-Can Highway, Elmhurst, Dunmore and Scranton, Interstate Rte. 81, Lackawanna Co. Bids Mar. 25, awarded Apr. 23. CD 3/30, under LB.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 2, Bids opened 4/26,

Wright Contg. Co., Odenton, Md., LB **$2,718,344,** (6 bidders), grade, drain, surf. rigid pavement 6.071 mi. Capitol Beltway and George Washington Parkway near Washington, P 722-39 and 52-320, Prince George Co. CD 4/20.

▲ **DELAWARE** — State Hy. Dpt., Hy. Admin. Bldg., Dover, Bids opened 4/13,

Del.—**George & Lynch, Inc.,** Delaware Trust Bldg., Wilmington, Del., LB **$122,809,** (12 bidders), 5 roads 9.14 mi. in east central part of county, Contr. 1845, Sussex Co.; LB **$220,096,** (11 bidders), dirt road imprvt. project on 15.26 mi., Contr. 1859, Sussex Co.;

Del.—**Henry C. Eastburn & Son,** Newark, Del., LB **$162,800,** (4 bidders), beach fill along shore at Bethany Beach, Sussex Co.;

Del.—cancelled bids, Basin Rd. Interchange, **$2,500,000-$3,000,000.** CD 3/23.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.,** 597 Madison Ave., New York, N. Y., CA Est. **$4,000,000,** Cardinal Spellman HIGH SCHOOL, Baychester Ave., NEW YORK, N. Y. Archdiocesan Bldg. Comn., 451 Madison Ave., New York 22, N. Y. Bids Apr. 20. CD 4/8.

▲ **Oakwood Homes Co.,** 301 Overlook Ave., Willow Grove, Pa., Separate Contracts, **$10,000,000,** 700-unit RESIDENTIAL DEVELOPMENT, Hartsville Park, HATBORO, PA.

▲ **Sovereign Constr. Co. Ltd.,** 1325-17 Pl., Fort Lee, N. J., CA **$3,279,000,** POLICE ADMINISTRATION, 7, 8, Race and Cherry Sts., PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Apr. 4. CD 4/21, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

May 12 West Virginia — May 20 Kentucky

▲† **Georgia and South Carolina**—BA After 5/12—U.S. Eng., P.O. Box 889, Savannah, Ga., 2 diversion dams, diversion channel on Seneca River, dike along Hunnicutt Creek, raw water supply system, Hartwell Proj., Savannah River, CIVENG-09-133-60-41, Est. $2,500,000. Plans deposit $4. CD 9/19/58.

BUILDINGS—BA

▲† **N. C., Fort Bragg**—HOUSING—BA 5/17—U. S. Eng., P.O. Box 1890, Wilmington, Capehart family housing, ENG-31-075-60-25. $6,000,000. Extended date. CD 4/12.

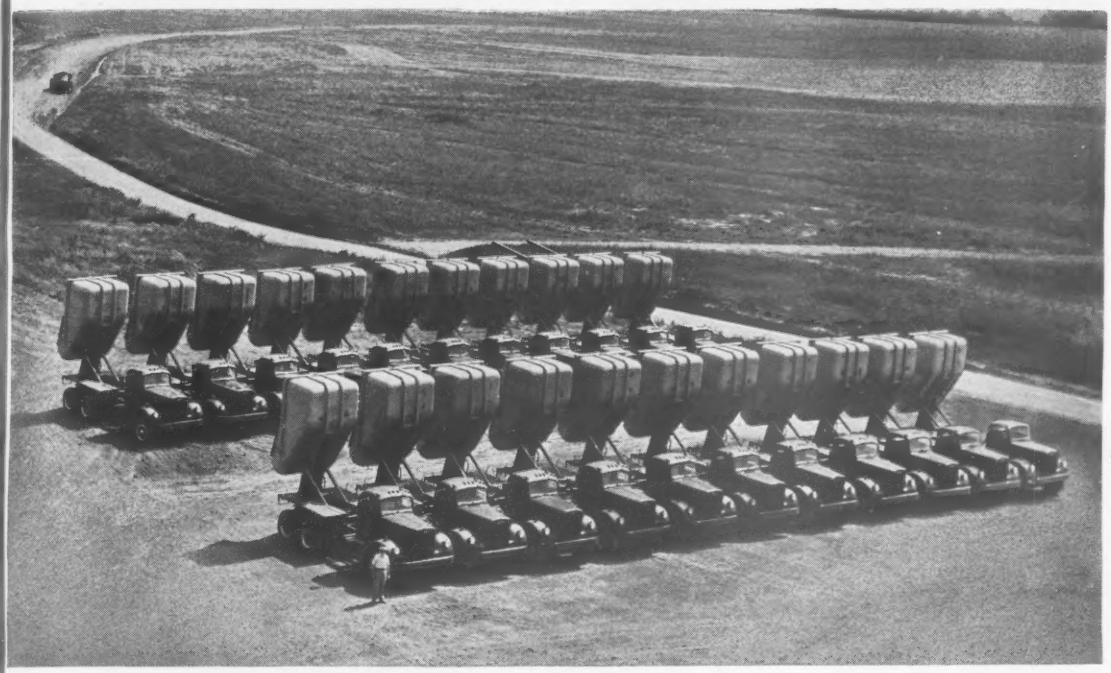
▲† **Tenn., Nashville**—HOSPITAL—BA 6/14—Veterans Admin., Constr. Service, Munitions Bldg., Wash. 25, D. C., 370,000 sq. ft. general and surgical hospital, office clinic, air-conditioning, grading, paving parking areas. $10,400,000. Eggers & Higgins and Edwin A. Keebie Assocs., Inc., 2000 Glen Echo Rd., archts. CD 4/29/59.

BUILDINGS—SLC

▲ **N. C., Greensboro**—TOBACCO RESEARCH, etc.—P. Lorillard Co., Inc., 200 E. 42nd St., New York, N. Y., soon lets contract, tobacco research bldg. addn., mfg. plant wing. Lockwood Greene Engineers, Inc., 41 E. 42nd St., New York, N. Y., archt. CD 3/31.

Continued on page 80

A major contractor speeds big concrete jobs with a fleet of Dumpcretes like this ...and so can you



You handle big yardages of concrete ... fast ... with Dumpcretes. Time and labor savings show up in a hurry on dams, reservoirs, power plants and similar mass concreting jobs. High discharge of Dumpcrete Body permits easy charging of concrete buckets, hoppers or conveyors. Dumpcretes are versatile, too ... when not used for concreting they'll haul earth, sand, aggregates—anything that flows! And Dumpcrete fleets, like the one shown above, really pay off on concrete paving projects!

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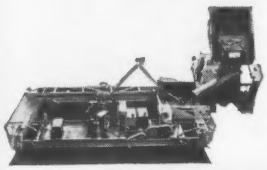

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"'Live track' power steering rock...SO WE KEEP OUR TD-25

–Asheville Contracting Company,

Shale and blue granite rock make up 85% of the 550,000-cu. yd. of roadway excavation on this contract —5.18 miles of Blue Ridge Parkway construction, for the United States Department of Interior.

That's why Asheville Contracting Company places maximum reliance on their "rock-movers' special": king-sized International crawler power! Where the going's too tough or job progress is too slow and costly with big clutch-steered crawlers, "Asheville's" new 230-hp TD-25 and two veteran TD-24's take over—and "run interference."

"International 'live track' power steering moves more dirt and rock," states M. H. Reighard, Superintendent of rock operations for "Asheville." "Therefore, we keep our TD-25 and TD-24's on trail-blazing and pioneering. The 'live track' feature keeps the blade in the material and makes steep work safer. TD-25 balance enables working 'almost straight up' on mountainous terrain."

Exclusive, years'-proved International Planet Power-steering gives you full-time live power on both tracks to handle full loads on turns as well as straightaways. Load-limiting "dead-track drag" is eliminated. And

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"live track" power-steering is combined with on-the-go, Hi-Lo power-shifting that lets you match power to load instantly, for full-speed cycles. You do away with time-wasting "gear-shift lag!"

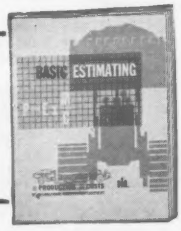
New TD-25 seven-roller tracks are strength-matched to the full effort of the high-torque, 230-hp turbo-charged Diesel engine! The "25" is platformed on shock-resistant, double-box-beam track frames—smoothly carried on International's dual-protected Dura-Rollers, the track rollers that make 1,000-hr. lube intervals practical!

As standard equipment at no extra cost, the TD-25 gives you exclusive, combined Planet Power-steering and Hi-Lo on-the-go power-shifting. And you get this work-speeding design advantage in torque-converter or direct drive model. Here, Asheville's "25" operator is ready to "shift-up" to keep the load on the move.

Power-steer and power-shift the TD-25 with king-sized loads—around curves, upgrade, anywhere! Compare planet-powered "25" ability to deliver full-load capacity, full-time—to outearn other big rigs up to 50%—blading rock, benching, push-loading, mass-production dozing (where fast reverse and decelerator action count), ripping shale! Let your International Construction Equipment Distributor demonstrate!

Even with an enormous offset load of shot-rock there's no "bank-nosing;" no sluing. The TD-25 operator simply operates the load-side track in high-speed range—the other track in low-speed range. Result: full-capacity, straight-ahead performance—the same as the "25" gives on benching, bank-cutting, or side-casting!

Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, *anywhere!* Yours for the asking from your International Construction Equipment Distributor!



International® *Construction Equipment*

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Ill.
A COMPLETE POWER PACKAGE

Continued from page 76

HEAVY CONSTRUCTION—LB & CA

▲† **Winston Bros. Co.,** 301 Clifton Ave., Minneapolis, Minn.; **Green Constr. Co.,** 321 Locust St., Des Moines, Iowa, and **Tecon Corp.,** Davis Bldg., Dallas, Tex., LB **$8,918,861,** Columbia Lock and Dam, Chattahoochee River, incl. control station, etc., CIVENG-01-076-60-33, ALABAMA and GEORGIA. U. S. Eng., P.O. Box 1169, Mobile, Ala. Bids Apr. 21. CD 3/16.

▲ **LOUISIANA**—State Hy. Dpt., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 4/20,

La.—**F. Miller & Sons,** Hy. 90, Lake Charles, La., LB **$1,427,993,** concrete piers, fender sys. and related work 0.17 mi. Lake Charles By-pass (Calcasieu River Bridge) Rte. I-210, SP No. 450-30-02, FAP No. I-210-1(35) 27, Calcasieu Parish;

La.—**U. S. Steel Corp.,** Gulf Bldg., Houston, Tex., LB **$1,123,127,** welded steel girder spans 0.179 mi. Lake Charles By-pass (Calcasieu River Bridge), Rte. I-210, SP No. 450-30-03, FAP No. I-210-1(36)27, Calcasieu Parish. CD 3/31;

La.—**Peter Kiewet Sons Co.,** 1024 Omaha National Bank Bldg., Omaha, Neb., LB **$3,187,755,** welded composite and welded plate girder spans and related work 0.205 mi. Ouachita River Bridge on West-Monroe-Monroe Hy., Rte. I-20, SP No. 451-06-06, FAP No. I-20-3(11) 115, Ouachita Parish. CD 3/23.

▲ **LOUISIANA**—State Hy. Dpt., Rm. 426, Headquarters Administration Bldg., Baton Rouge,

T. L. James & Co., Box 531, Ruston, La., CA **$2,911,943,** c. conc. pavt. 8.92 mi. Sunset-Opelousas-Hy. Rte. 3052. SP 424-01-01-FAP F-65(4), St. Landry Parish. Bids Mar. 16, awarded Apr. 7. CD 3/23, under LB.

▲ **W. Horace Williams Co.,** 3308 Tulane Ave., New Orleans, La., LB **$3,218,227,** (7 bidders), Nashville Avenue Wharf and approach trestles involving approx. 60,000 sq. yd. concrete deck on steel bearing piles, etc., NEW ORLEANS, LA. Port of New Orleans, No. 2 Canal St., New Orleans, La. Bids Apr. 19, CD 3/16.

▲ **KENTUCKY**—Commonwealth of Kentucky, Dpt. Hys., Frankfort, Bids opened 4/22,

Greer Bros. & Young, Inc., Hy. 25, London, Ky., LB **$3,037,817,** (12 bidders), grade, drain surf. 4.071 mi. Lexington-Tennessee State Line. I-75-1(3)0, Whitley Co.

BUILDINGS—LB & CA

▲† **H. L. Coble Constr. Co.,** P.O. Box 3328, Greensboro, N. C., LB **$5,530,500,** 340 units CAPEHART HOUSING, Columbus Air Force Base, Inv. 60-28, COLUMBUS, MISS. Contracting Officer, Columbus Air Force Base, Theatre, Columbus, Miss. Bids Apr. 19. CD 3/16.

▲ **Westinghouse Electric Corp.,** 3 Gateway Center, Pittsburgh, Pa., CA Total cost **$39,000,000,** 265,000 kw. STEAM TURBINE-GENERATOR for Big Sandy Power Plant, near Louisa, KENTUCKY. Kentucky Power Co., 15 St. and Carter Ave., Ashland, Ky. CD 3/7;
Babcock & Wilcox Co., 161 E. 42nd St., New York 1, N. Y., CA, 150 ft. high STEAM BOILER for Big Sandy Power Plant, Louisa (KENTUCKY).

▲ **General Electric Co.,** 1 River Rd., Schenectady, N. Y., CA **$16,250,000,** second GENERATOR (650,000 kw) boosting projected capacity to 1,300,000 kw for Paradise Steam Plant, PARADISE, KY. Tennessee Valley Authority, New Sprankles Bldg., Knoxville, Tenn. Awarded Apr. 22. Grand total $32,401,621. CD 3/25;
Babcock & Wilcox Co., Candler Bldg., Atlanta, Ga., CA **$13,837,256,** boiler for second turbo-generator for Paradise Steam Plant (Paradise, Ky.);
Ingalls Iron Works Co., 620 4th Ave. S., Birmingham, Ala., CA **$2,314,365,** structural steel for second unit for Paradise Steam Plant (Paradise, Ky.).

▲ **Foster & Creighton,** 1st American National Bank Bldg., Nashville, Tenn., CA **$3,000,000,** HOSPITAL addn., NASHVILLE, TENN. Vanderbilt University, 201 26 Ave. S., Nashville, Tenn. John A. Preston & Assocs., Nashville Trust Bldg., Nashville, archts. Awarded Apr. 19.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 10 Ohio — May 11, 18 Michigan

STREETS AND ROADS

May 10 Ohio — May 11 Michigan

▲ **O., Warren**—BA 6/1—City, City Hall, Contrs. B and C, sewage disposal system, Mahoning River interceptor and Red Run diversion conduit. $3,500,000. Plans deposit $60. Havens & Emerson, 640 Leader Bldg., Cleveland, Zone 14, engrs. CD 9/21/44.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Dpt. Hys., Columbus, Zone 15,

O.—**The Horvitz Co.,** 4375 E. 146 St., Cleveland, O., CA **$6,459,425,** est. $7,613,500, c. conc. paving, bridge over Northbound E. 14 St., Br. CUY-42-1832, over E. 9 St. and Ramp E-18, Br. No. CUY-42-1843, over Ramps E-8, E-10 and E-16, Bridge No. CUY-42-1854 over E. 14 St.; bridge on Ramp E-10 over Ramp E-8, Bridge on Ramp E-15 over W.B. Broadway; bridge on Ramps E-15 and E-18 over E. 9 St.; Bridge No. CUY-21-1573A over E. 14 St., Bridge CUY 21-1559 over E. 22 St., Bridge CUY-21-1544 over relocated Woodland Ave., U.S.R. 42, Section 18.29; U.S.R. 21, Section 15.32; U.S.R. 42, Section 18.42, U.S.R. 42, Section 18.77. Parts Nos. 6, 7A and 7B, I-77-5 (1) 162, I-71-5 (6) 247, I-71-5 (8) 248, City of Cleveland, Cuyahoga Co.;

O.—**C. E. Edgington & Son,** 913 S. Main St., Findlay, O., CA **$455,496,** est. $521,000, b. conc. on aggreg. paving, Bridge No. HIG-62-2627 over South Fork Lees Creek, Bridge No. HIGH 62-2717 over Lees Creek U.S.R. 62, Sections (26.23-26.33) F-676 (6), Village of Leesburg and Fairfield Twp., Highland Co.;

O.—**Peter Kiewit Sons' Co.,** 15806 Lorain Ave., Cleveland, O., CA **$1,871,866,** est. $2,319,600, grading, draining grade separation Bridge No. MUS-40-1133 over Linden Ave. U.S.R. 40, Section 11.33, I-70-7 (13) 157, U-633 (13), City of Zanesville, Muskingum Co.;

O.—**Chapin & Chapin, Inc.,** Rte. No. 20, East Norwalk, O., CA **$1,978,018,** est. $1,993,500, c. conc. paving, b. conc. resurf. grade crossing elimination, Bridge SCI-52-2025, over U.S.R. 52, Bridge No. SCI-52-2031, Waller St. over U.S.R. 52, pumping station, etc., U.S.R. 52, Section 19.83, U-UG-393 (9), U-626 (18), U-393 (12), City of Portsmouth, Scioto Co.;

O.—**Hinton Constr. Co.,** 638 N. Main St., Celina, O., CA **$119,879,** est. $136,400, b. conc. on aggreg. paving, wid'n., resurf. S.R. 732, Section 7.22, Village of Oxford, Oxford Twp., Butler Co.;

O.—**Fenton Paving Co.,** P.O. Box 310, Ashland, O., CA **$749,428,** est. $862,000, b. conc. on aggreg. paving, wid'n. and b. conc. resurf. U.S.R. 24, Section (0.15-9.08) City of Defiance and Defiance and Delaware Twps., Defiance Co. Bids Apr. 12. Grand total $11,634,112. CD 3/18.

▲ **Frazier-Davis Constr. Co., and Hunkin-Conkey Constr. Co.,** 1740 E. 12 St., Cleveland, O., CA **$2,316,876,** Section 2, auxiliary Mill Creek Interceptor Sewers CINCINNATI, O. City, City Hall, Cincinnati, O. Bids Mar. 29. CD 4/4, under LB.

▲† **William E. Schweitzer Co.,** 2207 Dodge Ave., Evanston, Ill., CA **$11,097,000,** four concourse buildings, terminal area, O'Hare Airport, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Mar. 31, awarded Apr. 26. CD 4/4, under LB.

BUILDINGS—LB & CA

▲ **Day Building Co.,** 5696 E. 141st St., Maple Heights, O. Own Forces, **$4,500,000,** 150 HOMES, Plymouth Park Estates, BAY VILLAGE, O.

▲ **Graue Constr. Co.,** 7828 Beechmont Ave., Cincinnati, O., Owner Builds, **$6,180,000,** 300 brick HOMES, Sherwood Forest Extension, CINCINNATI, O. J. S. Wald & Assoc., N. Bend Rd., Cincinnati, O., engrs.

▲ **Cleveland Electric Illuminating Co.,** Illuminating Bldg., Cleveland 13, O., Own Forces, **$15,000,000.** Lake Shore GENERATING PLANT, CLEVELAND, O. C. J. Beller, c/o owner, engr. CD 9/1.

▲ **Ernest G. Fritsche & Co.,** 1260 Zettler Rd., Columbus, O., Owner Builds, **$20,000,000,** 500 HOMES, 250-acre site east side of city, COLUMBUS, O.

▲ **Knowlton Constr. Co.,** 1133 W. Columbus St., Bellefontaine, O., LB **$2,978,000,** Phase III, Lebanon Correctional INSTITUTION, LEBANON, O. Dpt. P. Wks., State Dpt. Bldg., Columbus 15, O. Bids Apr. 26. CD 3/29.

▲ **Lake Breeze Homes,** 721 Marshall Bldg., Cleveland, O., Own Forces, **$2,600,000,** 176 addnl. HOMES, Lake Breeze Estates, SHEFFIELD LAKE, O. Marvin Rukin, 13947 Cedar Rd., Cleveland Heights 18, O., archt.

▲ **Kleinpaste & Rollene Builders,** 123 W. Maple St., Libertyville, Ill., CA **$3,000,000,** 160-unit MOTEL, Higgins and Mannheim Rds., PARK RIDGE, ILL. O'Hare-Chicago Corp., c/o Arthur Swanson & Assocs., archt., 41 E. Oak St., Chicago, Ill. CD 1/29/59.

▲ **Campanelli Bros.,** 1 Campanelli Dr., Brockton, Mass., Owner Builds, **$54,000,000,** "Weathersfield" RESIDENTIAL DEVELOPMENT and SHOPPING CENTER, on 1,000,000 acre farm, Schaumburg, near ROSELLE, ILL. Charles Greengard, c/o Greengard Assocs., 730 Waukegan St., Deerfield, Ill., engr.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 12 South Dakota — May 17, 18 Texas
May 19 Kansas

STREETS AND ROADS

May 12, Colorado, South Dakota — May 17 Colorado
May 17, 18 Texas — May 19 Kansas

BUILDINGS—BA

▲ **Minn., Winona**—HOSPITAL—BA 5/17—Community Memorial Hospital, 2 story, 90,000 sq. ft. hospital, initial stage, etc. $3,500,000. Schmidt, Garder & Erikson, 104 S. Michigan Ave., Chicago, Ill., archts. CD 3/21.

▲† **Tex., Fort Hood**—HOUSING—BA 5/18—U. S. Eng., P.O. Box 1229, Galveston, 800 units Capehart Housing, Inv. No. ENG-41-243-60-25. $10,000,000-$13,200,000. CD 4/25.

▲ **Mo., St. Louis**—APARTMENTS—BA 5/19—St. Louis Redevelopment Corp., 411 N. 7th St., Zone 1, two 12 story apartments, Laclede Ave. east of Grand Blvd. $5,000,000. Russell, Mulgardt, Schwarz, Van Hoefen, 1620 Chemical Bldg., 721 Olive St., Zone 1, archts. CD 12/14.

▲ **Tex., San Antonio** — HOSPITAL, etc. — BA 5/24 — Southwest Texas Methodist Hospital, Bd. Trustees, 535 Bandera Rd., Unit No. 1, Hospital, underground nuclear shelter, Fredericksburg Rd. and Babcock Rd., north of Oak Hills. $4,300,000. Phelps & DeWees & Simmons, 342 W. Woodlawn Ave., San Antonio, and Page, Southerland & Page, 602 West Ave., Austin, archts. Reynolds & Morgan, Ins. Bldg. and Geo. R. Rhine, Med. Prof. Bldg., engrs. CD 12/5/58.

▲ **Tex., Houston**—OFFICE, etc.—BA 6/1—Humble Oil & Refining Co., 1216 Main St., (selected list of bidders), 44 story office, $28,000,000; 6 story, 2 bsmnt., tunnel, parking garage, $1,000,000-$3,000,000. Welton Becket & Associates, 5657 Wilshire, Los Angeles, Calif., and 1718 Louisiana St., Houston, prime archts, Golemon & Rolfe, 5100 Travis St., and Geo. & Able B. Pierce, 2200 Welch St., Houston, Tex., consult. archts. Murray Erick & Associates, 5657 Wilshire, Los Angeles,engrs. CD 8/11/59.

HEAVY CONSTRUCTION—LB & CA

▲† **Morrison-Knudsen Co., Inc. and Paul Hardeman & Assoc.,** 411 W. 5 St., Los Angeles, Calif., LB **$20,926,500,** est. $23,686,717, 12 Atlas Missile launching sites incl. concrete silos 8-acre site each Altus Air Force Base, ENG-34-066-60-32, ALTUS, OKLA. U. S. Eng., 616 S. Boston Ave., Tulsa, Okla. Bids Apr. 26. CD 3/21.

▲† **Morrison-Knudsen Co., Inc., and Paul Hardeman & Associates,** 411 W. 5 St., Los Angeles, Calif. CA **$20,927,500,** twelve operational Atlas Missile Bases, incl. concrete silos, 8-acre each site Altus Air Force Base, ENG-34-066-60-32, ALTUS, OKLA. U. S. Eng., 616 S. Boston Ave., Tulsa, Okla. Bids Apr. 26. CD 4/28, under LB.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**J. C. Ruby, Inc.,** 907 Brown Bldg., Austin, Tex., CA **$2,689,365,** flex. base and b. conc. 8.766 mi. Hy. I.H. 10, Proj. I 10-4 (14) and (18), Bexar and Guadalupe Counties;

Tex.—**Brown & Root, Inc.,** Box 3, Houston, Tex., CA **$2,239,272,** grading, structures, base, sewers and surf. 1.86 mi. Hy. U 559, Proj. U-UG 514 (33), Harris Co.;

Tex.—**R. N. Adams,** Box 581, Kaufman, Tex., CA **$2,176,578,** grading, structures 13.557 mi. Hy. I.H. 45, Proj. I 45-2 (30) 120, Walker Co.;

Tex.—**Thos. J. Evans, Jr., & M. M. Pettyjohn,** Box 478, South Houston, Tex., CA **$3,155,421,** grading, structures, base and surf. 0.535 mi. Hy. I.H. 45, Proj. I 45-1 (24) 48, Harris Co.;

Tex.—**W. P. Carlisle & Oden Constr. Co.,** Dallas, Tex., CA **$525,524,** grading, structures, base and surf 6.024 mi. Hy. U.S. 80 and F.M. 1253, Proj. C 95-8 and 9-12 and 20, Smith and Wood Counties. Grand total $7,103,215. CD 4/26, under LB.

BUILDINGS—LB & CA

▲ **Dickmann-Pickens-Bond Constr. Co.,** Gazette Bldg., Little Rock, Ark., CA Est. **$10,000,000,** 1 story, 1,000,000 sq. ft. appliance mfg. PLANT, FORT SMITH, ARK. Norge Div. Borg-Warner Corp., 310 S. Michigan Ave. Chicago Ill. Swaim & Allen, Gazette Bldg., Little Rock, Ark., archts. Giffels & Rosetti, Marquette Bldg., Detroit, Mich., engrs. CD 2/9.

▲ **M. W. Kellogg Co.,** 711 3rd Ave., New York, N. Y., CA **$4,250,000,** 25,000 bbl. HEAVY OIL CATALYTIC CRACKING UNIT BORGER, TEX. Phillips Petroleum Co., Bartlesville, Okla. CD 9/19/55.

▲ **Fruin-Colnon Constr. Co.,** 1706 Olive St., St. Louis, Mo., CA **$4,800,000,** BREWERY PLANT ENLARGEMENT; CA **$275,000,** WAREHOUSING or STORAGE; CA Est. **$61,000,** water sys. expansion, GALVESTON, TEX. Falstaff Brewing Corp., 5050 Oakland Ave., St. Louis, Mo. Grand total $5,136,000. CD 3/23.

▲ **Kaighin & Hughes, Inc.,** 1080 Atlantic St., Toledo, O., CA Est. **$4,250,000,** POLYETHYLENE PLANT; **$145,000,** STORAGE, ORANGE, TEX. Allied Chemical Corp., 61 Broadway, New York, N. Y. CD 1/19.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

May 13 Arizona — May 25 California

STREETS AND ROADS

May 10 Alaska — May 13 Arizona
May 19 Nevada May 25, 26, June 1, 2 California

▲ **Calif., Georgetown** — BA 5/19 — Georgetown Divide Public Utility Dist., 165 ft. high earth and rockfill dam, 6,350 ft. rein.-con. pipe and 39,000 ft. partially lined ditch and Tunnell Hill tunnel about 4,600 ft. long for new water supply facilities. $2,500,000. Clair A. Hill & Assocs., 1525 Court St., Redding, engrs. CD 12/1.

▲† **Calif., Lompoc**—MISSILE LAUNCH TRAINING COMPLEX—BA 5/19—U. S. Eng., 751 S. Figueroa St., Los Angeles, WS-107A-1 Operational Base, Unitary Silo-Missile Launch Complexes, Vandenburg Air Force Base, ENG-04-353-60-89. $5,500,000. CD 4/27.

▲† **Hawaii, Honolulu**—AVIATION GAS TUNNEL, etc.—BA 6/17—Dist. P. Wks. Office, 14th Naval District, Pearl Harbor, convert Red Hill Oil Storage to aviation gas; 500 ft. tunnel and 425 ft. elevator shaft to be bored into hill, incl. 7 mi. 12- to 18-in. pipe line between tanks and Pearl Harbor. $3,000,000.

▲ **Ore., Eugene**—BA 7/7—Eugene Water & Electric Bd., Box 1112, Eugene, Carmen-Smith hydro-electric proj., developing 90,000 kilowatts, $25,912,000. Extended date. Bechtel Corp, 62 First St., San Francisco 5, Calif., engrs. ,Cornell, Howland, Hayes & Merryfield, 1600 Western Ave., Corvallis, Ore., consult. engrs. CD 3/31.

BUILDINGS—BA

▲ **Alaska, Anchorage**—HOSPITAL—BA 5/16—Sisters of Charity of Providence, 8th and L Sts., 6 story, bsmnt., steel frame hospital, 1 story service bldg., 1 story, 58x82x178 ft. convent-chapel with forced

air heating sys. $4,250,000. Extended date. C. Luckman Assocs., 9220 Sunset Blvd., Los Angeles, Calif. and E. Crittenden, 835 9th Ave., Los Angeles, Calif., archts. J. H. Stevenson, 408 Marion St., Seattle, Wash., engr. CD 4/28.

▲ **Wash., Pullman**—RESIDENCE HALLS—BA 5/25—Washington State University, Pullman, two 6 story women's residence halls. $3,000,000. Plans deposit $50. Walker, McGough & Trogdon, N. 9 Post St., Spokane, archts. CD 9/18.

▲† **Idaho, Mountain Home**—CAPEHART HOUSING—BA About 5/26—Procurement Office, Mountain Home Air Force Base, 820 units Capehart housing, Mountain Home Air Force Base, $10,000,000. CD 1/12.

▲ **Calif., San Francisco**—HIGH SCHOOL—BA 6/1—San Francisco Unif. School Dist., 135 Van Ness Ave., rein.-con., concrete block Southwest Senior High School, Eucalyptus Dr. $4,000,000. Plans deposit $300. Gardiner A. Dailey, 442 Post St., archt. CD 1/16/57.

BUILDINGS—SLC

▲ **Alaska, Anchorage**—HOSPITAL—Sisters of Charity of Providence, 8th and L Sts., soon lets contract, 6 story, bsmnt., steel frame hospital, 1 story service bldg., 1 story, 58x82x178 ft. convent-chapel with forced air heating sys. $4,250,000. C. Luckman Assocs., 9220 Sunset Blvd., Los Angeles, Calif., and E. Critenden, 835 9th Ave., Los Angeles, Calif., archts., J. H. Stevenson, 408 Marion St., Seattle, Wash., engr. CD 11/25.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,
George M. Brewster & Son, Inc., P. O. Box 115, Tustin, Calif., CA $4,825,808, grading, paving 13 mi. 8 lane freeway in Long Beach and Los Angeles between 0.1 mi. east of Long Beach Freeway and Alameda St. and constr. 10 traffic separation and ramp structures, VII-L.A.-158, D. Loch, C, LA, Los Angeles Co. Bids Apr. 7, awarded Apr. 21. CD 4/12, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 4/21,
Griffith Co., 1060 S. Broadway, Los Angeles, Calif., LB $2,672,562, (7 bidders), grading, paving 2.9 mi. four lane freeway US Hy. 80 between 0.2 mi. west of Magnolia Ave., El Cajon and 0.7 mi. east of 3rd St., incl. 5 bridges and interchange facilities, XI-S.D.-12, EcJ, C., San Diego Co. CD 3/16.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Vinnell Corp., Vinnell Constructors, A. F. Vinnell, 1078 North Mission Rd., Los Angeles, Calif., CA $9,693,235, 1 mi. eight lane freeway on Golden State Freeway, US 6-99 between 0.6 mi. south of Pasadena Ave. and 0.2 mi. northeast of Arnold St., incl. constr. Golden State-Pasadena Freeway Interchange, VII-L.A.-4,161,205-LA, Los Angeles Co. Bids Apr. 14. CD 4/19, under LB.

BUILDINGS—LB & CA

▲ **TGK Constr. Co.,** 2750 W. McDowell Rd., Phoenix, Ariz., CA $2,962,300, TELEPHONE BLDG. and addns., 228 W. Adams St., PHOENIX, ARIZ. Mountain States Telephone Co., 16 W. McDowell Rd., Phoenix, Ariz. Lescher & Mahoney, Architects and Engineers Ltd., Title & Trust Bldg., Phoenix, Ariz., archts. Awarded Apr. 15.

▲ **Baugh Constr. Co.,** 922 Poplar Place, Seattle, Wash., CA Est. $3,000,000, fourteen 1, 2 and 3 story APARTMENTS, swimming pool, SEATTLE, WASH. Sunset Beach Club, Inc., c/o West & Wheeler, 2 and Madison Sts., Seattle 4, Wash. Nickum, Lamont & Fey, 71 Columbia St., Seattle 4, Wash., archts.

▲ **Engstrum & Nourse & Stolte, Inc.,** 923 Folsom St., San Francisco, Calif., LB $6,125,900 (7 bidders), 8 story, 2 bsmnts., 2-level penthouse, rein.-con. CHEMISTRY BLDG., BERKELEY, CALIF. Bd. Regents University of California, Admin. Bldg., Berkeley, Calif. Anshen & Allen, 461 Bush St., San Francisco, Calif., archts. Bids Apr. 21. CD 12/18, under LB.

▲† **Del E. Webb Constr. Co.,** 2727 North Central Ave., Phoenix, Ariz., CA $6,557,346, 400 units Capehart HOUSING, Vandenberg Air Force Base (No. 3), LOMPOC, CALIF. Procurement Office, Vandenberg Air Force Base, Lompoc, Calif. Bids Apr. 7. CD 4/19, under LB.

▲ **Los Altos Dev. Co.,** 5512 Britton Dr., Long Beach, Calif., CA $2,641,900, 262 DWELLINGS, Marimba St., Sierra Leone Ave., Barro St., Abonado Pl., Aguiro St. etc., Tract 25271, LA PUENTE, CALIF. Bel State 6th, Inc., 5512 Britton Dr., Long Beach, Calif.

▲ **Morley Constr. Co.,** 770 Sunset Blvd., Los Angeles, Calif., CA $3,894,000, Los Angeles CITY COLLEGE addn., LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Feb. 9, CD 2/11, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 18 Ontario
STREETS AND ROADS
May 18, 25, June 1, 8 Ontario

BUILDINGS—BA

▲ **Man., Winnipeg**—REHABILITATION CENTER—BA 5/18—Sanatorium Bd. of Manitoba, 668 Bannatyne Ave., 6 story rehabilitation center, vicinity Winnipeg General Hospital. $4,000,000. Plans deposit $100. Moody, Moore & Partners, 295 Broadway, archts. CD 10/27.

▲ **Ont., Toronto**—CHILDREN'S CENTER—BA 5/19—Ontario Society for Crippled Children, 95 College St., 1 and 2 story, structural steel, rein.-con. frame, brick crippled children's center, Bayview Ave. $2,-500,000. Stanford & Wilson, 90 Eglinton Ave. E., archts. Reicher, Bradstock & Assocs., 600 Eglinton Ave. E., engrs. CD 7/28/58.

BUILDINGS—LB & CA

▲ **J. A. Jones Constr. (Canada) Ltd.,** Stephensville, Newfoundland, CA $2,978,700, 3 story, bsmnt., 210x406 ft. structural steel brick, block, stucco, National Research Council Applied Physics LABORATORY, OTTAWA, ONT. Dot. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Feb. 17. CD 2/24, under LB.

▲ **J. M. Jeanson Ltd.,** 912 St. Louis St., Sherbrooke, Que., and **Newton Constr. Co. Ltd.,** 508 Victoria St., Sherbrooke, Que., CA Est. $17,000,000, MENTAL HOSPITAL, Chemin de Stoke, SHERBROOKE, QUE. Provincial Health Dpt., Parliament Bldgs., Quebec City, Que. Pierre Rinfret, 1134 St. Louis Rd., Sillery, Que., archt. Albert Poulin, 1115 Prospect St., Sherbrooke, Que., and Jean Paul Audet, 1100 Prospect St., Sherbrooke, Que., assoc. archts. Cote, Lemieux, Carignan & Bourque, 144 Vimy St. N., Sherbrooke, Que., engrs. CD 4/13.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Parsons & Whitmore, Inc.,** 250 Park Ave., New York, N. Y., U.S.A., CA Est. $9,300,000, design and construct CELLULOSE PULP MILL, EDUF, EGYPT. Ministry of Industry, Cairo, Egypt.

PROPOSED PROJECTS

SEWERS, WASTE DISPOSAL

▲ **Ill., Rockford**—City, City Hall, defeated bonds Apr. 12, storm sewers, $4,000,000. CD 12/31.

▲ **O., Dayton**—City, City Hall and Bd. Comrs. Montgomery Co., Courthouse, incinerators to serve both city and county areas, $3,000,000. Loyd C. Huffman, co. engr. CD 2/8/57 and 8/14/58.

▲ **O., Lima**—City, City Hall, sewerage system, $1,827,-000. Lloyd G. Brownie & Assocs., 125 W. Church St., Marion, consult. engrs. CD 11/7/52.

STREETS AND ROADS

▲ **CONNECTICUT**—State Hy. Dpt., 24 Wolcott Hill Rd., Wethersfield,
Groton—Interstate Rte. 95, 4.1 mi. west of Rte. U.S. 1A, $5,000,000, John J. Kassner, 111 Broadway, New York, N. Y., consult. engr.
relocation Rte. 215, Brook St. to Palmer's Cove and connector to Rte. 215 bridge over N.Y. N.H. & H. R.R. 3-lane rolled beam, Proj. 57, 75 Second Section, $600,000.
New Haven—Interstate Rte. 91, East of Clinton Ave. 1.3 mi. $5,600,000. Leonard S. Wegman, Grand Central Terminal, New York, N. Y., consult. engr.
North Haven and Wallingford—Interstate Rte. 91 north of Bailey Rd., 5.7 mi., $7,000,000. Goodkind & O'Dea, 1214 Dixwell Ave., Hamden, consult. engrs.
North Haven—Interstate Rte. 91 north of Bailey Rd., 3.7 mi., $7,000,000, Charles A. Maguire & Assocs., 1100 Turks Head Bldg., Providence, R. I., consult. engrs.
Thomaston, Waterbury and Watertown—relocation Rte. 8, 6.8 mi. to Rte. 109 in Thomaston, $10,000,000. McFarland & Johnson, 333 Front St., Binghamton, N. Y., consult. engrs.

▲ **Mo., Rolla**—City, City Hall, repairing and repaving 10th and Iowa Sts. and overpass St. Louis-San Francisco R.R. tracks. $2,200,000.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
Putnam Co.—13 mi. Interstate Rte. 84 from Dutchess-Putnam County Line just east of Pecksville on Rte. 52 southeastward to Connecticut State Line east of Brewster. FAI Project, $5,000,000.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
Wayne and Cayuga Counties—20 mi. Rte. 104 from existing Route 104 just west of Sodus eastward on new location to point on existing Route 104 about ½ mi. east of Red Creek, FAI Project. $4,000,000.

▲ **QUEBEC**—Provincial Roads Dpt., Parliament Bldgs., Quebec City,
Amos—permanent road to Mattagami Mines Ltd. site 90 mi. from point 20 mi. north of Amos, $4,000,000.

AIRPORTS

▲ **Colo. Longmont**—AIR TRAFFIC CONTROL CENTER—Federal Aviation Agency, 1711 New York Ave. N.W., Wash., D. C., 56,000 sq. ft. Air Traffic Control Center Main Building, $1,000,000 ($4,000,000 with equipment).

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LATIN AMERICA

▲† **Mexico, Guaymas**—TRACKING STATION—U. S. National Aeronautics & Space Admin., 1520 H St. N.W., Wash. 25, D. C., tracking station for Project Mercury. $2,500,000.

AMERICANS ABROAD

▲ **Japan, Fujisama** — FACTORY — Yamatake-Honeywell Keiki Co., sub. of Minneapolis-Honeywell Regulator Co., 2753 4th Ave. S., Minneapolis, Minn., U.S.A., factory, regular commercial line, incl. heating, air-conditioning facilities, etc.

PUBLIC BUILDINGS

▲ **Calif., Chula Vista**—SCHOOLS—Chula Vista City School Dist., Box 907, voted $3,500,000 bonds Apr. 13, for five elementary schools.

▲ **Calif., Fresno**—SCHOOLS—Fresno City Unif. School Dist., 2348 Mariposa St., bond election June 7, schools, repairs and addns. $17,512,000. CD 11/9/56.

▲ **Calif., Los Angeles**—JAIL—Bd. Supervs., Los Angeles County, 501 Hall of Records, $6,315,000 bond election June 7, jail. CD 6/16/58.

▲ **Calif., Los Angeles**—OUT-PATIENT CLINIC—Bd. Supervs., Los Angeles County, 501 Hall of Records Bldg., $15,466,000 bond election June 7, out-patient clinic at General Hospital. CD 4/18/56.

▲ **Calif., Los Angeles**—THEATRE ARTS.—University of California, 405 Hillard St., plans by Charles Luckman Assocs., 9220 Sunset Blvd., Los Angeles, Calif., 3 story theatre arts bldg. $2,300,000. William L. Pereira & Assoc., 1231 W. 5th St., consult. archts. Welton Becket & Assoc., 5657 Wilshire Blvd., Zone 36, superv. archts.

▲ **Calif., San Rafael** — NURSING HOME, etc. — Bd. Supervs. Marin Co., Courthouse, $2,500,000 bond election June 1, county nursing and custodial home for aged and indigent. CD 11/12/58.

▲ **Calif., Vallejo**—SCHOOLS—Vallejo Unif. School Dist., 111 Idaho St., bond election June 7, schools, incl. Junior High School on Spring Rd., $1,760,508; Junior High School, Chabot Area, $1,720,312; elementary school in northern Vallejo, $432,368. CD 9/9/58.

▲ **Colo., Lakewood** — SCHOOLS — Jefferson Co., Bd. Educ., Denver Suburb, $11,625,000 bond election June 1, 2 Senior High Schools, 2 Junior High Schools, 2 elementary schools, school for exceptional children and 11 school addns. CD 12/5/58.

▲† **Conn., New London** — RESEARCH — Dist. P. Wks. Office, Third Naval Dist., Fed. Off. Bldg., 90 Church St., New York, N. Y., plans by Douglas Orr, 111 Whitney Ave., New Haven, anti-submarine research bldg. Underwater Sound Laboratory, Fort Trumbull, $4,432,000. Hubbard, Lawless & Blakeley, 110 Whitney Ave., New Haven, consult. engrs. Henry A. Pfisterer, 111 Whitney Ave., New Haven, structural engr. CD 2/11.

▲ **Conn., Wallingford**—HIGH SCHOOL—Town, Town Hall, plans by Ketchum, Gina, Sharp, Unger & Unger, 219 E. 44 St., New York, N. Y., East Side Junior High School, $1,800,000. Cosentini Associates, 10 Columbus Circle, New York, N. Y., consult. engrs. CD 6/19.

▲ **Ill., Rockford**—HIGH SCHOOL—Bd. Educ., 201 S. Madison St., high school, Spring Creek and Spring Brook Rd. $3,650,000. CD 9/19/56.

▲ **Iowa, Waterloo**—COURT HOUSE and JAIL—Black Hawk Co., Court House, plans by Toenjes & Stenson, 217 W. 4th St., Waterloo, court house and jail, $2,100,000.

▲ **N. J., New Brunswick**—MEN'S DORMITORY—Rutgers University, College Ave., plans by Ketchum & Sharp, 227 E. 44 St., New York, N. Y., 1,000-room men's dormitory, College Ave. $4,800,000. CD 12/14.

▲ **O., Cincinnati**—ENGINEERING-APPLIED SCIENCE, etc.—City, City Hall, Engineering-Applied Science, Bldg., $3,000,000; remodeling women's dormitory, men's gymnasium, $2,069,000; service bldg. $500,000; Main Library renovation and addn., $1,500,000; mechanical facilities renovation in Engineering Bldg., $500,000, all foregoing at University of Cincinnati. CD 11/9/56.

▲† **Tex., San Anonio**—CAPEHART HOUSING—Headquarters, U. S. Air Force, Aerospace Medical Center, Brooks Air Force Base, plans by Noonan, Krocker & Rogers, 2002 N. St. Mary's St., Zone 12, 170 units Capehart Housing, Brooks Air Force Base. $2,805,000. CD 4/30/52, under Airports.

▲ **Wis., Marshfield**—POWER PLANT FACILITIES—Marshfield Electric & Water Dpt., enlarge power plant facilities, $2,000,000. Benjamin, Woodhouse & Guenther, 28 W. Adams Ave., Detroit, Mich., consult. engrs. CD 6/21/56, under LB.

▲ **Ont., Windsor**—ROW HOUSING, etc.—Central Mortgage & Housing Corp., 650 Lawrence Ave. W., Toronto, and Dpt. Planning & Development, Parliament Bldgs., Toronto, row housing and apartment unit in three phases, Federal-Provincial Project, $3,500,000-$4,000,000.

COMMERCIAL BUILDINGS

▲ **Calif., Hayward**—SHOPPING CENTER—Owner, c/o BEAB Corp., c/o Friedland Bros. Constr. Co., Contractor, 30682 Vanderbilt St., La Playa Shopping Center, incl. 30 stores, between Hesperian and Caloroga. $4,500,000.

▲ **Calif., Los Angeles**—BANK and OFFICE—Union Bank and J. Paul Getty, 325 W. 8th St., plans by Claude Beelman, 7421 Beverly St., 22 story bank and office, Wilshire Blvd. and Western Ave. $10,000,000. CD 3/7

▲ **Calif., Palo Alto**—HOME FOR ELDERLY—Palo Alto Medical Research Foundation, 860 Bryant Ave., plans by John Graham, 1426 55th St., Seattle, Wash., Channing House home for elderly. $6,000,000.

▲ **Calif., Solona Beach**—BEACH APARTMENT—A. A. Helwig, 404 No. Roxbury Dr., Beverly Hills, beach apartment extension, Sierra Ave. $3,000,000.

▲ **Ill., Chicago**—HOSPITAL—Children's Memorial Hospital Development Program, 104 S. Michigan Ave., Zone 3, plans by Schmidt, Garden & Erickson, 104 S. Michigan Ave., 5 story Childrens Memorial Hospital wing, 706 W. Fullerton Ave. $5,500,000. Bids About July 15. CD 11/20.

▲ **Ill., Chicago** — HOSPITAL — Grant Hospital, 551 W. Grant St., plans by Richard W. Prendergast, 30 N. Dearborn St., Zone 2, 6 story hospital addn. $2,386,000.

▲ **Iowa, Bettendorf** — APARTMENTS — Advance Realty Co., 1414 W. Locust St., Davenport, and Dohrn Realtors, Bettendorf, one hundred ten, 4 suites each, apartments. $6,500,000. Constr. 1960.

▲ **Kan., Kansas City**—APARTMENT—Arrow Investment Co., c/o Joseph F. Porter, Jr., 114 W. 8th St., Kansas City, Mo., plans by Skidmore, Owings & Merrill, 100 W. Monroe St., Chicago, Ill., 23 story apartment, Johnson Dr. and State Line. $22,000,000.

▲ **Ky., Louisville** — COLLEGE — General Association of Baptists in Kentucky, Shelbyville Rd., plans by Jas. H. Kolbrook, Starks Bldg., college on Shelbyville Rd., 233 acres, to incl. class bldgs., dormitories, residences, faculty, athletic fields, etc., near here. Over $5,000,000.

▲ **Mass., Boston**—CLINIC—Massachusetts General Hospital, Eye & Ear Infirmary, Fruit St., plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, Mass., and Ellerbe & Co., assoc. archts., 333 Sibley St., St. Paul, Minn., clinic. $2,000,000. CD 3/7/52.

▲ **Mass., Worcester**—MOTOR HOTEL—Slater Corp., c/o Able Corp., 29 Pearl St., plans by Urbahn, Brayton & Burrows, 635 Madison Ave., New York, N. Y., motor hotel, retail stores and restaurant, Main St. $4,750,000. Constr. 1960-1961.

▲ **Minn., Minneapolis**—HOSPITAL—Mount Sinai Hospital, 22nd St. and Chicago Ave., plans by Liebenberg & Kaplan, 51 S. 13th St., 55,000 sq. ft. 86-bed hospital wing. $2,500,000. Olson, Emanuelson & March, 207 Sexton Bldg., engrs.

▲ **Mo., Kansas City**—OFFICE—Business Men's Assurance Co., 215 W. Pershing Rd., Kansas City, Mo., plans by Skidmore, Owings & Merrell, 30 W. Monroe St., Chicago, Ill., 15 story office, southwest Trafficway and 31st St. $7,000,000.

▲ **Mo., Kansas City**—DOCTORS OFFICE—St. Luke's Hospital, 4400 Nichols Parkway, plans by Neville, Sharp & Simon, 25 E. 12th St., Kansas City, Mo., 3 story, 65,000 sq. ft., 420x470 ft. doctors office. $2,000,000.

▲ **N. J., Hackensack-Overpeck**—CULTURAL CENTER—North Jersey Music Center, Inc., 185 N. Washington Ave., Bergenfield, cultural center, Overpeck or Hackensack area, $3,000,000.

▲ **N. Y., New York**—APARTMENT—200 Central Park South Inc., 551 Fifth Ave., Zone 17, plans by Wechsler & Schimenti, 118 East 25th St., Zone 10, apartment, 200-204 Central Park South. $4,000,000.

▲ **O., Austintown (Br. Youngstown)**—HOMES—Sleepy Hollow Land Co., Central Tower Bldg., Columbus, 250 homes, west of Fitch Blvd. $4,500,000.

▲ **O., Mt. Healthy (Cincinnati)**—Homes—Murphy Homes, Inc., 7945 Hamilton Ave., 600 one story, 1½ story, bsmnt., brick homes, Kemper and Hamilton Aves., $9,600,000; 150 1 story, 1½ story, brick, bsmnt. homes, off Pippin Rd., $1,400,000; 323 one story, 1½ story, bsmnt., brick homes, near Crest and Pippin Rds., $5,168,000. CD 4/20.

▲ **R. I., Providence**—MOTOR-HOTEL—Owner, c/o Castellucci & Galli, archts.-consult. engrs., 75 Empire St., 20 story, steel frame Tower House Motor Hotel, over 200-car garage, $3,500,000.

▲ **R. I., Providence**—TOWER HOUSE MOTOR HOTEL—Owner, c/o Herbert Y. Mason, 86 Weybosset St., and Howard L. Winograd, 1359 Broad St., plans by Castellucci & Galli, Inc., 75 Empire St., Tower House Motor Motel, Dorrance, Friendship, Eddy and Clifford Sts. $3,500,000. Constr. 1960.

▲ **S. C., Charleston**—MOTEL—Life Underwriters, Inc., 304 Meeting St., plans by Lyles, Bissett, Carlisle & Wolfe, 1800 Gervais St., Columbia, 7 story downtown motel, $2,000,000. CD 4/15.

▲ **Tex., Dallas**—HOSPITAL—St. Paul's Hospital, 3121 Bryan St., plans by Roscoe P. DeWitt, 2025 Cedar Springs Rd., 10 story, 412,000 sq. ft. concrete frame, 530 bed hospital, $10,000,000. Thompson & Abney, 2023 Cedar Springs and Leo L. Landauer & Associates, 4801 Lemmon Ave., Dallas, consult. engrs. Bids mid-June 1960. CD 4/30/59.

▲ **Tex., Houston**—STORE, etc.—Battelstein's, Inc., 812 Main St., plans by Burke, Kober & Nicholais, 2405 W. 3rd St., Los Angeles, Calif., Suburban Merchandise Store, $4,000,000; plans hard-paved area and auto center, $100,000; earth site development, $70,000, site in S.W. Houston. P. R. Sterrett, 812 Main St., Houston, consult. engr for latter two projects. Bids by Fall. CD 7/2.

▲ **Va., Fredericksburg**—SHOPPING CENTER—Lawrence L. Levin, 1106 Vermont St. N.W., Wash., D. C., shopping center, $2,000,000.

▲ **Va., Richmond**—APARTMENTS—Peter Edwards, Columbus, O., c/o Morton G. Thalhimer, Inc., Realtor, 1013 E. Main St., sixteen 12 unit apartments, Hamilton St. between Monument and Patterson Ave. $2,000,000.

▲ **Va., Springfield**—DISTRIBUTION CENTER—Drug Fair, Inc., 1200 S. Eads St., Arlington, 280,000 sq. ft. distr. center, Blalock Rd., Washington Circumferential Hy., and Southern Ry. tracks, 10½ acres, $2,000,000.

▲ **Man., Winnipeg**—ADMINISTRATION—Manitoba Telephone System, Telephone Bldg., Portage Ave. E., plans by Smith, Carter, Searle & Assocs., 65 Dewdney Ave., 6 story, T-shaped administration bldg., Portage Ave. W. $4,000,000. CD 8/27/58.

▲ **Ont., Brantford**—SHOPPING CENTRE—W. W. Taylor, Brantford, and John D. Rosart, Hamilton, Maurice Levine and I. Yontef, 14 Huntley St., Toronto, North Park Plaza Shopping Centre, Fairview Dr., $3,000,000.

INDUSTRIAL BUILDINGS

▲ **Ill., Decatur**—WAREHOUSE, etc.—Mueller Co., 512 W. Cerro Gordo St., valves mfg. warehouse and office, $5,000,000. Sverdrup & Parcel Engineering Co., 912 Olive St., St. Louis 1, Mo., consult. engr.

▲ **N. Y., Tonawanda**—PLANT—Ashland Oil & Refining Co., 1409 Winchester Ave., Ashland, Ky., will not construct hydroalkylation plant, River Rd. Project abandoned. CD 11/18.

▲ **Tex., Carrollton**—PAINT MANUFACTURING PLANT, etc. Glidden Paint Co., Union Commerce Bldg., Cleveland 14, O., paint manufacturing plant, $2,000,000; storage or warehousing, $125,000; area and auto center paving drainage, $90,000.

▲ **Tex., High Island**—SULPHURIC ACID PLANT, etc.—United States Sulphur Corp., 1700 Holcombe Blvd., Houston, sulphuric acid plant, $4,000,000; sulphur mining and manufacturing plant, $1,000,000; site area earthwork, $70,000; water sys., $60,000; drainage and paved area and parking center, $100,000.

▲ **Tex., Waco**—CEMENT MANUFACTURING PLANT addn., etc.—Universal Atlas Cement Div. of United States Steel Corp., cement manufacturing plant addns. $8,000,000; storage, $175,000; dust control sys. $125,000.

▲ **Virginia** — INDUSTRIAL PARK — Paul Gordon & Assocs., 5410 Williamsburg Rd., Richmond, plans by Edward F. Sinnott, 112 E. Cary St., Richmond, industrial park, near here, $20,000,000. Austin Brockenborough & Assocs., 106 E. Cary St., Richmond, consult. engrs.

▲ **Va., Chesterfield**—PLANT—Allied Chemical Co., National Aniline Div., 61 Broadway, New York 6, N. Y. Caprolan heavy denier nylon plant.

▲ **Va., Richmond**—PLANT—Manchester Board & Paper Co., 9th St. (Sub. Federal Paper Board, Inc., 24 River Rd., Bogota, N. J.), paper plant. $10,000,000.

▲ **Wash., Seattle**—CEMENT STORAGE—Ideal Cement Co., Denver National Bldg., Denver, Colo., cement storage terminal, $2,000,000. Ken R. White, 1567 Marion, Denver, Colo., consult. engrs. CD 12/29.

UNCLASSIFIED

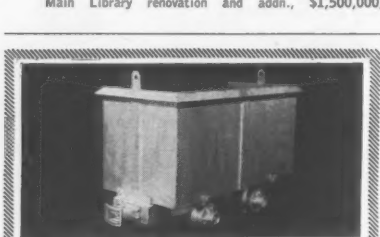
▲ **Alaska**—CRUDE OIL PIPE LINE—Kenai Pipe Line Co., sub. Standard Oil Co. of California, 225 Bush St., San Francisco, Calif., 20 mi. 8 in. crude oil pipe line from Nikiski, Cook Inlet, feeder lines in Soldotna Creek and Swanson River Oil Field, pumping stations: storage and marine terminal, Cook Inlet. $4,000,000.

▲† **Alaska, Adak**—COMMUNICATION FACILITIES—U. S. Eng., Box 7002, Anchorage, communication facilities, Adak Naval Air Station. $2,900,000 (funds released). CD 7/7.

▲† **Alaska**—COMMUNICATION FACILITIES—U. S. Eng., P.O. Box 7002, Anchorage, communication facilities, Nikolski Dew Line Station. $1,600,000 (funds released).

▲ **Montana**—PRODUCTS PIPE LINE—Continental Pipe Line Co., and Husky Oil Co., Cody, Wyo., 85 mi. products pipe line, Helena to Great Falls. $4,250,000.

(Proposal Advertisements see pp. 90 to 93)



PRACTICAL, RUGGED MINE CARS

Side Dump and Rocker Dump cars, 24" gage. Tunnel cars, 18" and 24" gage. Various capacities. Ask for Bulletin No. 18.

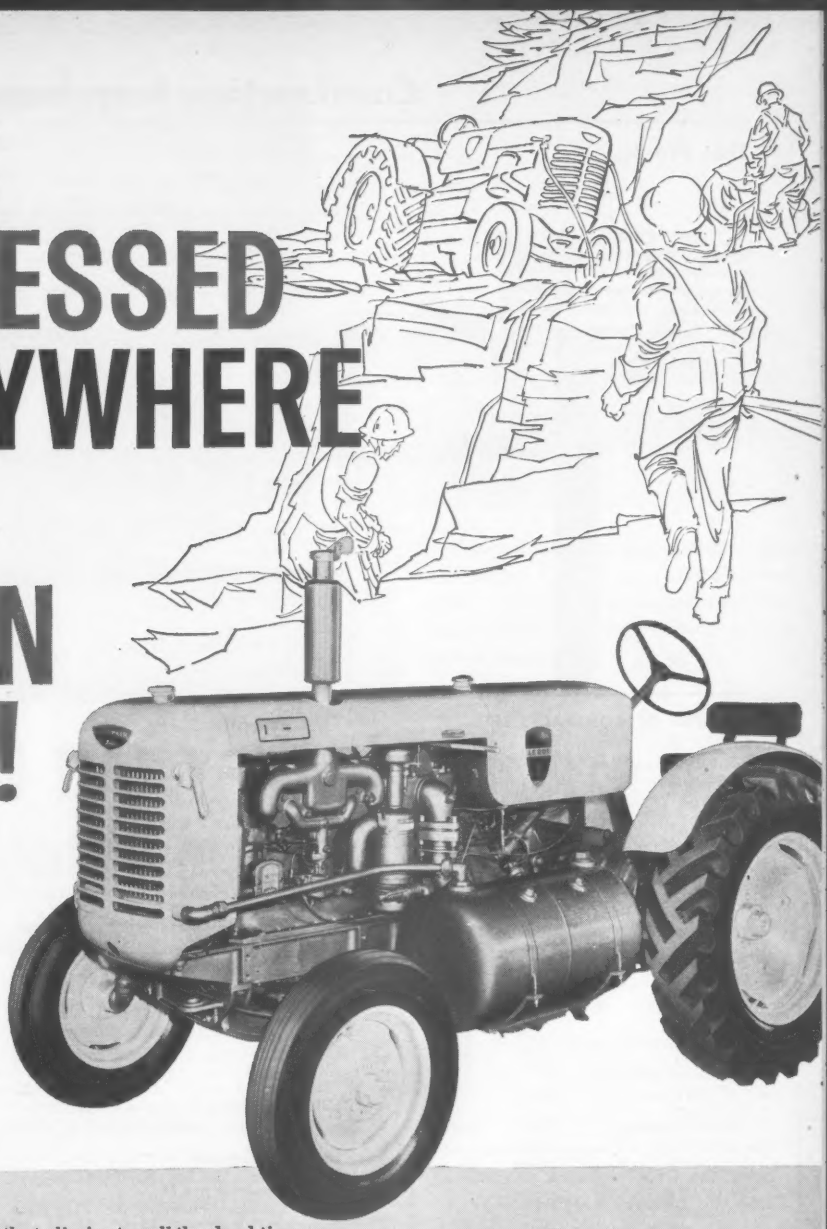
MAYO

MAYO

TUNNEL AND MINE EQUIPMENT

Lancaster, Penna.

BRINGS COMPRESSED AIR ANYWHERE UNDER ITS OWN POWER!



Here's a self-propelled air compressor that eliminates *all* the dead time spent by conventional compressors waiting to be towed somewhere!

The Tractair is a 42-hp tractor and a 125-cfm air compressor. It brings air power to sites you'd fear to tread with truck-towed compressors. You can park it in a ditch or on a steep slope, attach the hose, and start drilling. When finished, the operator drives it to the next job — without waiting for a tow truck or men to jockey it into position. You can drive up close to the work, too, which means shorter hose . . . less hose damage . . . and full 125 cfm power at the tool.

The improved Tractair offers greater efficiency and fuel economy. It's designed for operator convenience . . . all-weather dependability . . . and the easiest servicing in the field. Add available attachments and you have a money-saving self-propelled air-plant for year-around construction and maintenance work.

Ask your Le Roi distributor for a free demonstration. Or write to Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.

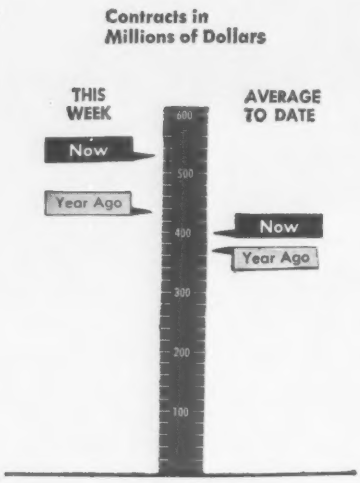
LE ROI TRACTAIR® AIR COMPRESSORS

T-01

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

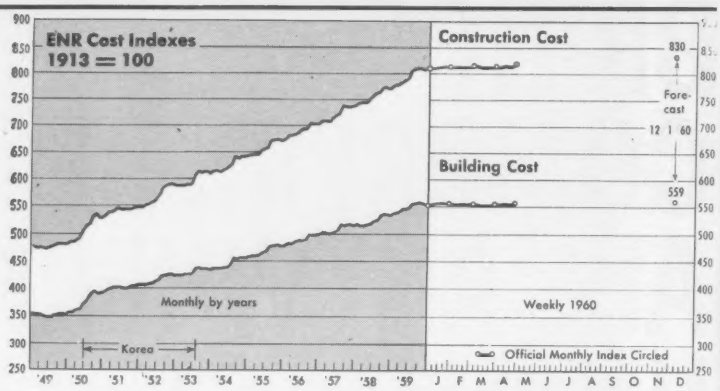
Contracts Awarded In 50 States By Type	This Week	Cum. 18 wks 1960	Chge '59-'60 %
	millions		
All Heavy Construction	$530.4	$7,204.4	+10
By Ownership			
PRIVATE	235.1	3,860.9	+23
PUBLIC	295.3	3,343.5	− 2
State & Municipal	209.7	2,542.8	+ 6
Federal	85.6	800.7	−22
By Type of Work			
PUBLIC			
Waterworks	7.0	157.6	+ 7
Sewerage	10.1	188.0	− 9
Bridges*	10.3	326.1	+62
Highways	93.5	1,000.4	+ 6
Earthworks, Dams & Waterways	14.8	230.2	−18
Buildings:			
Excl. Housing	98.1	790.2	−11
Housing	14.0	176.9	−22
Unclassified	47.4	475.3	− 9
PRIVATE			
Buildings:			
Mass Housing	120.2	1,946.4	+44
Commercial	36.0	736.0	− 3
Industrial	67.2	838.6	− 5
Unclassified	11.8	338.7	+135

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	As of Apr. 28	Com. 17 wks 1960	Chge '59-'60 %
	millions		
Corporate Securities	$104.2	$ 941.5	−25
State and Municipal:			
All Except Housing	86.2	2,193.6	− 7
Housing	....	13.6	−56
Federal Loans	2.0	58.0	+46
Federal Aid	29.2	29.2	....
Total Nonfederal	$221.6	$3,235.9	−12
Federal Appropriations:			
Projects in U.S.	3.2	3.2	....
Outside U.S.	....	....	....
Total New Capital	$224.8	$3,239.1	−12


ENR Cost Indexes 1913 = 100
Construction Cost
830
Fore-cast
12 1 60
Building Cost
559
Monthly by years
Weekly 1960
Korea
Official Monthly Index Circled
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 '59 J F M A M J J A S O N D

ENR INDEXES (1913 = 100), 20-cities' average	Week of April 28 1960	% Change from Mar. 31 1960	% Change from April 30 1959
Construction Cost	820.18*	+0.8	+3.8
Building Cost	557.66*	+0.4	+2.5

* Official Monthly Index for May 1960

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

This Month . . .

WAGE RATES, 20-cities' average

	May 1960	% Change from April 1960	% Change from May 1959
Common	$2.672	+1.0	+5.3
Skilled (average 3 trades)	3.976	+0.4	+4.1
Bricklayers	4.201	+0.3	+3.5
Structural Ironworkers	4.003	+0.2	+4.1
Carpenters	3.724	+0.9	+5.0
Equipment operators (average three types)	3.604	+0.1	+4.5

MATERIAL PRICES, 20-cities' average

Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	121.15	−0.2	+0.1
Lumber, 2x4 Pine, per M fbm	111.73	+1.6	+3.5
Cement, bulk, per bbl	4.013	0	1.1
Sand, per ton	2.467	0	−0.7
Ready-mixed concrete, per cu yd	14.30	+0.07	+3.0
Gypsum sheathing, ½″x2′x8′, per Msf*	63.20	0	+0.5
Fiber board sheathing, ½″ sq. ed., per Msf*	73.51	0	+3.2
Mineral wool insulation, 3′ batts, per Msf*	68.58	0	−1.0
Crushed stone, 1½″, per ton, CL	2.663	−0.3	−3.5
Concrete blocks, sand/gravel, 8″x8″x16″, each*	0.233	0	+3.0

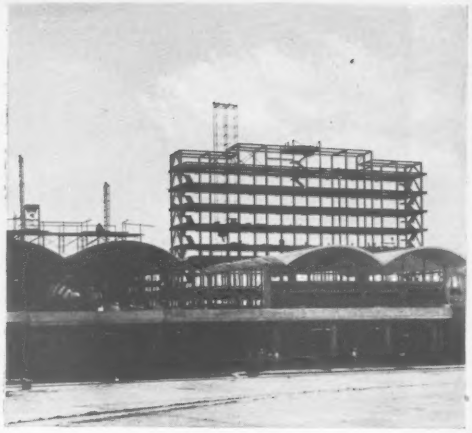
Latest Month . . .

	April 1960	May 1960	April 1959
Brick, common per M	40.70	0	+5.7
Lime, hydrated finishing, per ton, CL	39.39	0	+2.1
Structural clay tile, 3x12x12″, per M, 2,000 up*	189.26	0	+1.6
Vitrified clay sewer pipe, std 12″, per ft	1.429	+0.2	+3.6
Concrete sewer pipe, 12″, per ft	1.446	+4.0	+7.7

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
1959						
Mar	781.35	163.80	540.32	153.59	586	169
Apr	784.41	164.44	542.93	154.33	532	154
May	790.37	165.69	544.44	154.76	700	202
Jun	795.16	166.69	548.35	155.87	650	188
July	806.69	169.11	551.74	156.84	671	194
Aug	811.15	170.04	554.31	157.60	509	147
Sept	812.56	170.33	555.88	158.01	545	158
Oct	811.40	170.09	555.40	157.88	415	120
Nov	809.78	169.75	554.19	157.53	509	147
Dec	808.63	169.52	552.80	157.10	436	126
1959 Average	797.39	167.17	547.82	155.72	540	156
1960						
Jan	812.03	170.23	554.40	157.57	432	125
Feb	812.93	170.41	555.43	157.92	486	140
Mar	813.46	170.53	555.16	157.81	533	154
Apr	813.58	170.55	555.23	157.83	696	201
May	820.18	171.95	557.66	158.52	...	...



Construction of Atlanta's dramatic new $17 million Air Terminal Facilities is one of Blount Brothers' many significant projects currently underway throughout the United States

CONSTRUCTION DAILY–Vital Resource in identifying new bid invitations

—reports Blount Brothers Construction Company

With a reputation of versatility in the construction of all types of public and private works, Blount Brothers says, "Our Company has found the CONSTRUCTION DAILY, both the Newsletter and Reports invaluable and vital resources in keeping our key personnel abreast of new bid invitations as well as general trends in the industry. The CONSTRUCTION DAILY is initially received and reviewed by the Assistant to the President and jobs in which the Company has an interest are identified here. Later the projects are discussed with the appropriate division and department heads for further action.

"All top management reviews information relative to industry trends and price information is made available to our estimating department."

CONSTRUCTION DAILY is exactly what it says, a daily report of construction activity. It comes to you in two sections – the daily Newsletter and daily Construction Reports. Newly announced bid dates, proposed new work projects, price information, hot news from Washington and elsewhere are all subjects of the Newsletter.

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Scope of operations include multi-million dollar industrial plants; vital defense projects; mills and factories; governmental buildings and atomic energy plants; river dams; docks; highways; air fields; bridges and public works.

Organized in three divisions—Building Construction, Heavy Construction and Materials, main offices are in Montgomery, Alabama.

Construction Daily

A McGraw-Hill Publication

Dept. ENR 107 330 West 42 Street, New York 36, N.Y.

The design flexibility of reinforced concrete permitted designers of this highway bridge to achieve the grace and beauty of thin barrel arch spans.

Northern Illinois Toll Highway Bridge
Designers: Vogt, Ivers, Seaman & Associates, Cincinnati, Ohio
Consulting Engineer: Joseph K. Knoerle & Associates, Baltimore, Md.
General Contractor: CKG Associates, Elgin, Illinois

For Design Flexibility... ECONOMY...SPEED...*Specify*

REINFORCED CONCRETE

Regardless of structural requirements, reinforced concrete offers greater design freedom, economy, and speed of erection. Its flexibility permits the construction of intricate or complicated designs and simplifies the problems of varying elevations and terrain. And because of the ready availability of materials from local sources, your projects start on time—finish on schedule. Specify reinforced concrete for your next project and take advantage of its many design and construction benefits.

For maximum construction economy in this railroad bridge, designers specified a cored-slab, cast-in-place bridge deck with a rigid frame structure of reinforced concrete.

Santa Fe Railroad Bridge
Designers: County of Los Angeles Road Department
Contractor: Otis B. Pierson Construction Company

Speed of construction and availability of materials permitted contractors on this reinforced concrete highway interchange bridge to complete the project ahead of schedule.

U.S. Highway 23 Interchange
Designer: Michigan State Highway Dept.
General Contractor: Walter Toebe & Co. Lansing, Michigan

CONCRETE REINFORCING STEEL INSTITUTE CRSI FOUNDED 1924

Concrete Reinforcing
Steel Institute
38 S. Dearborn St.
Chicago 3, Illinois

6-6

April Construction Was Best Ever

Heavy construction contract awards for April reached a record high for the month, $2 billion. In the process, it shoved 1960 toward a record (see p. 21).

A 25% rise over the March rate and a 29% increase over the weekly average of a year ago bring these awards for the first four months of 1960 to $6.7 billion. This is 8% higher than last year's contracting. The margin for the first quarter, however, was only 1% over 1959's first quarter.

The speed-up in construction contracting in April stands out in mass housing, public works, public housing and industrial and commercial building. Mass housing almost doubled its March pace and more than doubled the rate for April, 1959.

Last month private construction moved along faster than it has at any time since the 1956 boom. Over-all private industry awards of $1.2 billion last month zoomed April to 40% above the weekly rate of March and 68% over the level of April '59.

In the past four months contractors picked up $3.6 billion in new business, 23% more than the average in '59.

Public works awards have increased each month since December. State and municipal projects were responsible for most of the jump. April's $855 million in this category is 10% over the March figure and comes within 1% of the April, 1959 level. The $697 million worth of state and municipal projects going to contract in April is 22% above the March rate and 21% higher than the previous April.

Only federal construction falls behind. The four-month total of $715 million is 26% lower than the weekly average of the first third of 1959.

Highway and bridge work, which together tops $1.2 billion, is 50% over the volume of the first four months of 1959.

Cost Indexes Set New Records

Widespread wage increases have swept costs to a record high this month. ENR's 20-Cities Construction Cost Index is at 820.18, topping last month's index by 0.8% and May 1959 by 3.8%. The 20-Cities Building Cost Index reads 557.66, 0.4% above April and 2.5% above May 1959. Both indexes are based on 1913 as 100.

Both deferred wage increases and new contracts providing higher rates contribute to the cost increases. Deferred wage hikes effective May 1 were 10 cents an hour for building construction labor in Boston; 12 cents an hour for laborers, carpenters, bricklayers and structural ironworkers in Cleveland; 22½ cents an hour for carpenters in Los Angeles, and 18 cents an hour for San Francisco laborers. Building laborers in Philadelphia got a 20-cent hourly deferred boost; deferred wage increases of 15 cents an hour went to heavy construction laborers and bricklayers.

And under new contracts, Boston and Philadelphia carpenters received increases of 10 cents hourly.

But more are coming. New contracts are being negotiated in Boston, Detroit, Los Angeles, Minneapolis, New Orleans and St. Louis. Another round of increases will probably result.

Then by June 1, contracts will expire for bricklayers, carpenters and structural ironworkers in Chicago; laborers and bricklayers in Cincinnati; bricklayers in Detroit and New York; and laborers, bricklayers and carpenters in Pittsburgh. Wage boosts now loom in those cities. In addition, Cincinnati carpenters will get a 15 cents an hour deferred wage increase on June 1.

Fir lumber prices continued to slip, but shortages of grade-marked Southern pine lumber moves ENR's 15-city average of 2x4 No. 2 common pine to a value of 111.73, a 1.6% rise over last month.

Engineering Construction Contracts for April

	April, 1960								U. S. Cumulative			Canada
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West*	Total U. S.	% Change '59 to '60 (av. wk.)	1960 (17 wks.)	1959 (18 wks.)	% Change '59 to '60 (av. wk.)	April 1960
Public Works, Total	**28,868**	**171,308**	**127,574**	**123,139**	**239,378**	**165,016**	**855,283**	**− 1**	**3,048,187**	**3,421,924**	**− 6**	**37,183**
Waterworks	1,225	3,489	4,028	4,051	58,605	3,202	74,600	+171	150,723	146,924	+ 9	1,330
Sewerage	3,192	14,501	3,149	9,379	5,340	5,459	41,020	−21	177,861	206,129	− 9	3,600
Bridges	340	53,615	19,356	16,102	11,953	2,603	103,969	+165	314,588	201,141	+66	715
Earthwork, waterways	2,131	4,783	4,884	1,664	15,955	17,853	47,270	−45	215,490	282,131	−19	1,612
Streets and roads	6,947	31,025	60,090	42,390	79,728	43,664	263,844	+ 2	906,812	944,960	+ 2	12,993
Buildings: Residential	415	2,537	3,644	16,396	12,223	11,437	46,652	−36	162,798	227,240	−24	888
Other	12,698	51,808	23,011	24,206	22,504	47,373	181,600	−16	691,979	888,442	−18	11,602
Unclassified	1,920	9,550	9,412	8,951	33,070	33,425	96,328	−16	427,936	524,957	−14	4,443
State & Municipal	26,501	155,692	112,427	116,465	186,707	99,717	697,509	+21	2,333,048	2,394,170	+ 3	30,979
Federal	2,367	15,616	15,147	6,674	52,671	65,299	157,774	−45	715,139	1,027,754	−26	6,204
Private, Total	**57,859**	**222,164**	**140,118**	**256,793**	**134,727**	**338,394**	**1,150,055**	**+68**	**3,625,841**	**3,131,163**	**+23**	**38,295**
Bridges				250			250		1,399	150	+937	350
Buildings: Industrial	6,887	19,772	80,122	47,873	45,029	12,837	212,520	+53	771,388	880,237	− 7	21,805
Mass housing	40,830	145,896	14,900	144,565	53,073	298,114	697,378	+110	1,826,220	1,350,054	+43	3,318
Other	9,745	55,835	29,033	63,367	20,955	18,779	197,714	+ 7	700,018	756,599	− 2	11,454
Unclassified	397	661	16,063	738	15,670	8,664	42,193	+40	326,816	144,123	+140	1,368
Total Apr. 1960—4 weeks*	**86,727**	**393,472**	**267,692**	**379,932**	**374,105**	**503,410**	**2,005,338**	**+29**				**75,478**
Total Mar. 1960—5 weeks*	130,996	453,416	244,712	312,400	503,388	356,475	2,001,387	....			....	342,948
Total Apr. 1959—5 weeks*	162,295	374,632	380,635	366,065	367,814	288,101	1,939,542	....			....	132,385
Four Months—1960* (17 wks)	**399,706**	**1,593,284**	**906,472**	**1,113,494**	**1,390,814**	**1,270,258**		....	**6,674,028**		**+ 8**	**610,601**
Four Months—1959* (18 wks)	448,291	1,540,815	1,163,389	968,591	1,487,115	944,886		....		6,553,087	....	439,826
% Change '59 to '60 (av. wk.)	−6	+9	−18	+22	−1	+323		....			....	+47

* Includes Alaska & Hawaii contracts

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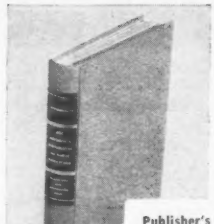
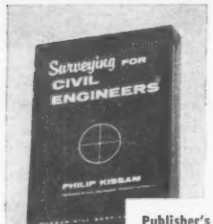


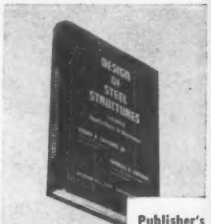
Publisher's Price, $7.75 Club Price, $6.60

Soil Mechanics, Foundations, and Earth Structures by G. P. Tschebotarioff. Gives principles and practices.



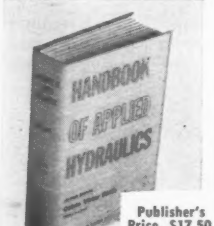
Publisher's Price, $8.75 Club Price, $7.45

Surveying for Civil Engineers by Philip Kissam. Fundamentals, instruments, and methods for more accurate surveys.



Publisher's Price, $8.50 Club Price, $7.25

Design of Steel Structures by E. H. and C. N. Gaylord. Covers both steel and aluminum structural members.



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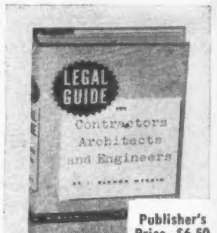

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ENR-5-5

Mechanization: An Uneasy Issue

- **Problem of finding a proper balance between the rights of labor and management is far from solved.**
- **Indications are that labor will continue to put a price tag on mechanization. But what price?**

The question of whether labor has a right to share in the fruits of mechanization is apt to become a key collective bargaining issue over the next decade.

Some observers feel that the future course of American industry may well depend on how labor and management approach the issue.

The development of new products and materials, the introduction of new methods and techniques and the search for lower costs give the construction industry a special interest in the problem. Constructive efforts to think the problem through are already under way in the steel industry as a result of the steel-strike settlements.

Last month, new light was shed on the issue by a U. S. Supreme Court ruling that a union has the right to demand a labor contract clause that would prevent management from abolishing jobs without union consent. A strike over the demand, the court said, is a lawful labor dispute that the Norris-LaGuardia Act does not allow a court to enjoin. The case is particularly significant because it involved the railroad industry, where freedom of action is curbed by government agencies.

Present indications are that both labor and management realize that mechanization is an irresistible force, and both sides are afraid of it.

This was apparent in a panel discussion that proved to be the highlight of the recent Fifth Annual Materials Handling and Packaging Conference in Berkeley, Calif.

Title of the panel—"Is Labor Putting a Price Tag on Mechanization?"—in itself hinted at the fears of management and gave a clue to management's position on upcoming negotiations. It also gave the teamsters a chance to show their interest in a shorter workweek and in displacement pay as antidotes to mechanization.

Sears L. Hallett, publisher of "Modern Materials Handling", said that any threat to mechanization is a threat not only to labor itself but to the nation's security. He claimed that labor indeed has put a price tag on mechanization, and cited a $1.5-million mechanization fund set up by West Coast shipowners to help workers who are squeezed out of jobs.

The fund is jointly administered by Pacific Maritime Association and the International Longshoremen's and Warehousemen's Union. Mr. Hallett charged that PMA "bought peace" with the fund, which was the price paid for introduction of containerization on the Pacific Coast waterfront.

"The worker will benefit only from increases in the gross national product," he asserted, and said that increases in the GNP over the past 20 years have been brought about strictly by labor-saving measures.

Harold Gibbons, international vice president of the teamsters union, approached the problem from the other end. He asserted that while labor is not opposed to mechanization, it has reservations about the sudden and unheralded introduction of labor-saving machinery or methods.

The teamster official conceded that management undoubtedly has the right to improve its production methods, but he contended that employers have the responsibility of softening the shock of mechanization on the working force.

Mr. Gibbons scoffed at the idea that labor has slowed the pace of mechanization. "Ninety percent of the shops that have automated," he said, "have been union shops. . . . You can't say that labor is blocking things."

"It's all well and good to say that this will work itself out in the long run. But there is nothing automatic about the long run. The situation calls for militant collective bargaining, and that's our promise to management," declared Mr. Gibbons.

The rule of reason was urged as a steppingstone to the problem's solution by PMA's J. Paul St. Sure, who called mechanization "the emotional issue of the year. . . . If we call things by their right names, we will find a middle ground and a solution."

Mr. St. Sure answered criticism that the ILWU contract is a give-away to labor. "We do not consider ourselves a blight on the industry," he said. "But we realized that new machines on the waterfront are causing dislocation, and this is a fit topic for discussion."

He said the fund will be used as a "hardship" and relocation fund, basically to provide makeup pay if a longshoreman's pay drops below a certain figure due to the berthing of a containerized ship. The fund contains an agreement allowing for gradual attrition in the dockside labor force.

Outside Contractors Protected

Outside contractors doing maintenance and construction work in industrial plants may be able to insulate themselves against in-plant labor disputes by insisting that a separate plant entrance be set aside for the exclusive use of their workers.

That seems to be the moral of the story told by the Court of Appeals for the District of Columbia in its Appliance Park decision.

The court upheld a National Labor Relations Board ruling that the International Union of Electrical Workers (an industrial union) engaged in an unlawful secondary boycott by picketing a construction gate during a labor dispute with General Electric at G.E.'s Appliance Park plant in Louisville, Ky.

The picketing occurred during a lawful strike by the union, which represented workers in the G.E. plant. Pickets were placed at all gates, including Gate 3A. Use of that gate was limited to independent contractors and their employees. Plant workers used four other gates.

The company had contracts with some 12 independent contractors at the time of the strike. Most of these contractors' workers refused to cross the picket line.

The NLRB concluded that the union's object in picketing Gate 3A was to enmesh the workers of the neutral employers in its dispute with the company. The union sought to force the outside employers to quit doing business with G.E., the board said, by inducing the workers to strike.

The court agreed with the board's conclusions. It enforced the NLRB order that the union remove its pickets from Gate 3A.

Explains Picketing

Organizational picketing called competitive right

Should a labor union be allowed to picket a shop that is not unionized for the purpose of inducing the employer or his employees to join the union even though neither has any desire to be unionized?

The answer of the California Supreme Court, considering the problem under state law, is "yes."

Those who have wrestled with the merits and the evils of forced unionism may find the court's reasoning illuminating:

"The crucial issue in this case is whether a closed or union shop agreement is a proper objective of a labor union that does not represent any of the employees directly involved.

"The law recognizes that union labor has a legitimate interest in organizing workmen in competing nonunion shops to insure the benefits of collective bargaining in union shops. . . . Just as the union has to reckon with the risk that it might lose its struggle for organization, so the nonunion employer risked loss of employment in resisting organization.

"Such risks, grim as they are, are the price of lawful competition in a free enterprise system. The union plays for the high stakes of holding the gains it has made in union shops, so the nonunion shop plays for the high stakes of holding the competitive advantage it has against union shops."

The court's comments appear in a 4 to 3 ruling that approved the picketing of a nonunion barbershop in San Diego.

Labor in Brief . . .

• **Political endorsement deferred**—The AFL-CIO plans to defer until August 17 a decision on the course of action it will take in the Presidential campaign. Heads of AFL-CIO international unions will then meet in Chicago to decide whether to remain neutral or support a particular candidate.

• **Consumer protection**—The AFL-CIO has called for organized action at the legislative level on behalf of the consumer. "Hard-won wage increases should not and need not be frittered away on overpriced products, phony bargains, dangerous foods, worthless medicines, and concealed financing costs," it said.

OFFICIAL PROPOSALS

Bids: See Advertisement

The Port of New York Authority

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract NYA-110.016—New York International Airport—Airline Wing Buildings—Alterations to Third Floor Windows—No deposit required—Bids will be received until 2:30 P.M. on Tuesday, May 24, 1960.
Contract EP-110.005—Elizabeth-Port Authority Piers—Buildings Nos. 121, 122, 125 and 126—Sand Drains—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, May 24, 1960.
Contract DTH-110.001—Downtown Manhattan Heliport—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, May 24, 1960.
Contract LGA-320.012—LaGuardia Airport—Easterly Roadways and Parking Lots No. 3 and No. 4—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, May 24, 1960.
Contract BP-180.002—Brooklyn-Port Authority Piers—Pier 7—Building Finishes—Deposit $50.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, June 7, 1960.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, May 5, 1960

Bids: May 19, 1960

Soil Explorations and Foundation Investigations
Grand Central Parkway, L. I., N. Y.

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time on May 19, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON GRAND CENTRAL PARKWAY RECONSTRUCTION, SECTION 1, BROOKLYN-QUEENS EXPRESSWAY TO NORTHERN BOULEVARD, QUEENS COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM-161.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. Austin M. Sarr, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.
The Engineer's Estimate of cost for this work is $32,875.00.
Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".
The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Bids: May 20, 1960

Brooklyn-Port Authority Piers Alterations To Building No. 56—Area "B"

THE PORT OF NEW YORK AUTHORITY
CONTRACT O & M—587

Sealed proposals for altering Area "B" of Building No. 56 at the Brooklyn-Port Authority Piers at Montague Streets, Brooklyn, New York will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M. Friday, May 20, 1960, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Department, Room 1001, where a receipt will be issued. The receipt is then to be delivered to the Department of Purchase and Administrative Services, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of Proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, May 5, 1960

Bids: June 1, 1960

Calumet-Sag Project Railroad Bridges and Embankment

The Chicago, Rock Island and Pacific Railroad Company, W. B. Throckmorton, Chief Engineer, is taking bids due on June 1, 1960, at 1:30 P.M. Central Daylight Time, for Calumet-Sag Channel Subcontract No. 5 for the Chicago, Rock Island and Pacific Railroad Company's portion of the track grading west of Western Avenue and south of 135th Street and certain portions of the work on the substructures and superstructures of Chicago, Rock Island and Pacific Railroad Company's approach Bridges Nos. 161, 163, 164 and 168, and the construction of some short sections of channel wall near Bridge No. 167A, in connection with Calumet-Sag Project at Blue Island, Illinois.

Plans and Specifications may be obtained from the Chief Engineer's office, Room 403, LaSalle Street Station, 139 West Van Buren Street, Chicago 5, Illinois. A deposit of $25.00 for each set of plans and specifications will be required. The deposit should be in the form of a certified check or money order made payable to the Treasurer, C. R. I. & P. R. R. Company. The deposit will be returned within 15 days after the opening of bids if plans and specifications are returned in good condition.

Contractors Watch This Section—

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

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CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: May 12, 1960.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 12th day of May 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM; District Engineer, 109 No. Genesee Street, Utica 1, New York						
Herkimer	M 60-4	Washington St. Bridge (E-34) over Erie Canal, at the Village of Herkimer	....	Clean. & Paint. Bridge	$200 Plans $10	3,400
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cortland (Rte. 281)	FARC 60-50	Homer-Preble, S.H. FASH 46-3 Project F-215(7)	2.65	Asphalt Concrete, Type 1A	$6,000 Plans $5	104,000
Cortland, Onondaga, Oswego, & Seneca	R.C. 60-41	12 Various State Highways in District 3 on Routes 3, 5, 11A, 41, 89, 104, 221	37.77	Subsealing Cem. Conc. Pavt.	$16,000 Plans $5	290,000
Oswego (Rte. 57)	R.C. 60-49	Fulton-Three Rivers, Pt. 1, S.H. 5250	2.24	Asphalt Concrete, Type 1A	$7,200 Plans $5	133,000
Wayne (Rte. 104)	FARC 60-58	Alton-Wolcott, Pt. 1, S.H. 1516; Alton-Wolcott; Pt. 2; S.H. 8005; Wolcott-Red Creek, S.H. 5290 Project F-362(12); F-346(10)	10.95	Asphalt Concrete, Type 1A	$20,000 Plans $5	370,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe (Int. Tour. Rte. 490)	FITS 60-9	Int. Rte. Conn. 580, S.H. FIC 58-2 Rochester City: Eastern Expressway, Pts. 2 & 3 Project I-490-2(16)	2.49 (3.43 Acc.)	Traffic Signs and Delineators	$3,300 Plans $5	60,000
Monroe (Rte. 104)	FARC 60-38	Rochester-Webster, Pt. 1, S.H. 98; Rochester-Webster, Pt. 2, S.H. 99; Rochester-Webster, Pt. 3, S.H. 100 Project F-362(11)	3.45	Asph. Conc.=2.29 Mi.; Misc. Work=1.16 Mi.	$39,000 Plans $5	703,000
Monroe (Rte. 33)	FARC 60-53	Buffalo, Pt. 5, S.H. 634 Project F-96(10)	0.06	Asph. Conc., Type 2B=0.05 Mi.; Misc. Work=0.01 Mi.; Widen. Existing Ribbed Arch Bridge 3 Spans Total 161'	$2,400 Plans $5	43,000
Orleans (Rte. 63)	FARC 60-52	Yates-Lyndonville-Ridgeway, S.H. 581 Project S-407(2)	3.24	Asphalt Concrete	$12,000 Plans $5	217,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Building, 65 Court Street, Buffalo, New York						
Cattaraugus (Rte. 18)	R.C. 60-44	Bradford-Carrollton, Pt. 2, S.H. 8018A	0.17	Rehabilitating Through Truss Bridge 7 Spans—893.6'	$14,000 Plans $5	255,000
Erie (Rte. 5)	FARC 60-62	Lake Shore-Lackawanna City, S.H. 5019 Athol Springs-Walden Cliffs, S.H. 5407 Project U-750(18)	1.36 (1.62 Acc.)	9" Cem. Conc. Pavt. 2 @ 24 & Var.=1.21 Mi.; Asph. Conc.=0.09 Mi.; Misc. Work=0.06 Mi.; Access—9" Cem. Conc. Pavt. 2 @ 24 & Var.=0.69 Mi.; Asph. Conc.=0.93 Mi.; Hg. Sep. Comp. Pl. Girder 3 Spans Total 332'	$82,000 Plans $5	1,598,000
DISTRICT No. 6, WILLIAM J. DENNIS, District Engineer, State Office Building, 30 West Main Street Hornell, New York						
Allegany (Rte. 244)	R.C. 60-55	Phillips Creek-Alfred, S.H. 8375	1.90	Asphalt Concrete	$6,600 Plans $5	122,000
Tioga (Rte. 17)	FARC 60-56	Waverly-Owego, Pt. 3, S.H. 5257 Project F-498(6)	3.03	Asphalt Concrete	$14,000 Plans $5	235,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Lewis (Rte. 26)	FARC 60-30	Lowville Village, S.H. 5309 Project F-330(8)	0.91	Asph. Conc. Type 1A=0.71 Mi. Misc. Work=0.20 Mi.	$23,000 Plans $5	425,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Rockland & Westchester	T.C. 60-1	Broadway-Hastings-Dobbs Ferry-Mt. Pleasant-Tarrytown-North Tarrytown, S.H. 9206; White Plains-Eastview Road, S.H. 5571; Spring Valley-Knappe Corners, S.H. 689; Knappe Corners-Nyack, S.H. 5178	....	Traffic Signals	$2,500 Plans $5	45,000
Ulster (Rte. 44)	R.C. 60-46	Mid-Hudson Bridge, West Approach, S.H. 9108	0.77	Galv. Beam Type Guide Railing	$750 Plans $5	14,000
Westchester (Rte. 9A)	R.C. 60-45	Unionville-McKeels Corners, S.H. 52; McKeels Corners-Briarcliff Manor, S.H. 53; Briarcliff Manor-Echo Lake, S.H. 54; Briarcliff-Crotonville, Pt. 1, S H 1922	4.52	Galv. Beam Type Guide Railing	$3,000 Plans $5	53,000
DISTRICT No. 9, J. C FREDERICK; District Engineer, 71 Frederick Street, Binghamton; New York						
Chenango (Rte. 80)	R.C. 60-59	New Berlin-Columbus, S.H. 704	4.09	Asphalt Concrete	$11,000 Plans $5	199,000
Otsego (Rte. 166)	FATS 60-7	Milford-Roseboom, S.H 8226; Cherry Valley-Roseboom; S.H. 786; East Springfield-Cherry Valley, S.H. 934; Cherry Valley-Sharon Springs, Sharon Springs-Canajoharie Pt. 1, S.H. 8064; Cherry Valley-Sprout Brook; Pt. 1A, S.H. FASH 59-6 Project F-385(4)	6.60	Traffic Signs	$350 Plans $5	6,600
DISTRICT No. 10, AUSTIN M. SARR; District Engineer, 325 W. Main Street, Babylon; L. I., New York						
Kings, Nassau & Queens (Rtes. 27 & 27A)	FABLP 60-1 FAVWE 60-1	Belt Parkway (Gowanus Parkway to Whitestone Parkway); Van Wyck Expressway (Belt Parkway to Grand Central Parkway) Project U-777(6); U-1085(17)	34.92	Aluminum Mall Barrier; Fencing; Guide Railing; Misc. Work	$120,000 Plans $5	2,170,000
Nassau	NSP 60-2	Northern State Parkway	5.53	Roadside Development	$9,200 Plans $5	167,000
Queens (Int. Tour. Rte. 495)	FIHHE 60-3 FAHHE 60-4	Int. Rte. Conn. 514 (Horace Harding Expressway) Section 2; Horace Harding Expressway Section 2 (Contract 5) Project I-495-1(35); U-862(24)	2.72	Roadside Development	$10,000 Plans $5	172,000
Queens (Int. Tour. Rte. 495)	FIHHE 60-5	Int. Rte. Conn. 514-Horace Harding Expressway (Contract 8) (Queens Blvd. to Francis Lewis Blvd.) Project I-495-1(39)	5.30	Clean Up and Miscellaneous Work	$30,000 Plans $5	534,000

(Continued on following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: May 24, 1960

Pumping Stations

NOTICE TO BIDDERS
FAIRFAX COUNTY WATER AUTHORITY
ANNANDALE, VIRGINIA
PROJECT 15

Sealed proposals will be received by the Fairfax County Water Authority at the office of the Authority, 7310 Maple Street, Annandale, Virginia, or by mail addressed to the Authority, P. O. Box 91, Annandale, Virginia, until 2:00 P.M., EASTERN DAYLIGHT TIME, MAY 24, 1960, at which time they will be read aloud, and contracts awarded as soon thereafter as practicable for the construction of pumping stations at various locations in Fairfax County, Virginia.

The work comprises the furnishing of all materials and construction of the pumping stations and appurtenant work and is divided into two divisions, as follows:

Division A—Langley Pumping Station, comprising two pumping units each at 3.5 MGD at 150 ft. total dynamic head and two pumping units each at 7.0 MGD at 235 ft. total dynamic head.

Division B—Fairfax Circle Pumping Station, comprising two pumping units each at 1200 GPM at 100 ft. total dynamic head.

Bidders may submit proposals on either Division or on both Divisions.

The Instruction to Bidders, Proposal, Agreement, Form of Bid Bond, Performance Bond, Plans and Specifications for the work may be examined at the office of the Fairfax County Water Authority, 7310 Maple Street, Annandale, Virginia, and at the office of Greeley and Hansen, Engineers, 14 East Jackson Boulevard, Chicago 4, Illinois. Copies of the Plans and Contract Documents may be obtained upon the deposit of $50.00 for each set, to be refunded upon return of such set in good condition within 10 days after the opening of bids.

Each proposal must be accompanied by a bid bond or a certified check on a solvent bank or trust company, made payable to the Fairfax County Water Authority, in the amount of 5% of the total amount bid for each Division for which a proposal is submitted, as assurance that the bid is made in good faith.

Bidders must be registered as Contractors in the Commonwealth of Virginia, as provided by Chapter 7 of Title 54 of the Code of Virginia of 1950.

The Fairfax County Water Authority reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interests of the Authority after all bids have been examined and canvassed.

FAIRFAX COUNTY WATER AUTHORITY
By: James J. Corbalis, Jr.
Engineer-Director

April 25, 1960

Bids: May 23, 1960

Niagara Frontier Port Authority New Roofing and Appurtenant Work at the Buffalo Port Terminal Buffalo, New York

NIAGARA FRONTIER PORT AUTHORITY
CONTRACT NO. 14-1

Sealed proposals covering Construction Work for New Roofing, Glazing and Appurtenant Work, at the Buffalo Port Terminal, 901 Fuhrmann Boulevard, Buffalo, New York, will be received until 11:00 o'clock a.m., Daylight Saving Time (10:00 a.m. Eastern Standard Time) on the 23rd day of May 1960, by Carl L. Biers, Chairman of the Niagara Frontier Port Authority, 432 City Hall, Buffalo, New York, at which time and place said proposals will be opened and read aloud publicly.

All provisions of the New York State labor law as related to this contract shall be complied with.

The drawings, specifications and contract documents may be examined at the office of the Niagara Frontier Port Authority, 432 City Hall, Buffalo, New York; Buffalo Port Terminal, 901 Fuhrmann Boulevard, Buffalo, New York and New York Department of Public Works, State Office Building, Buffalo, New York. Drawings and specifications may be obtained at the office of the Niagara Frontier Port Authority, 432 City Hall, Buffalo, New York, upon deposit of $15.00 per set, to be refunded upon return of sets in good condition within 10 days of the award of the contract.

The proposal for this contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by a certified check payable to the Niagara Frontier Port Authority for an amount stipulated in the proposal. The successful bidder will be required to give a bond conditioned for the faithful performance of the contract and a separate bond for the payment of laborers and material men, each bond in the sum of one hundred percent of the contract price.

The right is reserved to reject any or all bids when such rejection is in the interest of the Niagara Frontier Port Authority.

CARL L. BIERS
CHAIRMAN
Niagara Frontier Port Authority

Date May 5, 1960

Bids: May 18, 1960

District of Columbia—Armory Board, April 19, 1960. CONSTRUCTION OF D. C. STADIUM, 22nd and East Capitol Street, Wash., D. C. (Invitation No. C-60159-B). Bid forms, plans and specifications are now available from Procurement Office, D. C., Rm. 404, 499 Pennsylvania Ave., N.W., upon deposit of a certified check for $200.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS TO BE RECEIVED 2:00 PM, EDT, May 18, 1960 in Room 424, Procurement Office, 499 Penn. Ave., N.W. and OPENED AT D. C. NATIONAL GUARD ARMORY at 3 PM, EDT on the same day.

Bids: May 12, 1960

Board of Education—Bureau of Construction Notice: Re. Prequalification Forms For Contractors

APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT The Superintendent of Design, Construction and Physical Plant at the office of the Bureau of Construction, 4th Floor, 42-15 Crescent Street, Long Island City 1, N. Y. will receive application for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

General construction, plumbing and drainage (including heavy kitchen equipment), heating and ventilating, electrical work and lighting fixtures.

BROOKLYN
New P.S. 257. Varet & Humboldt Streets.
QUEENS
New P.S. 232. 153rd Ave. & 84th Street.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of Design, Construction and Physical Plant, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors will expire on Thursday, May 12, 1960.

JOSEPH R. WEISS
Superintendent of Design, Construction and Physical Plant.

Starting: Monday, May 2, 1960
Five (5) days.

Dated: April 26, 1960

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5321) will be received at Ogden, Utah, until 10 a.m., Mountain Standard Time, June 7, 1960, for furnishing labor and materials for earthwork, pipe lines, and structures, North Davis Laterals, Unit 1, Davis Aqueduct Lateral System, Weber Basin Project, Utah. Location south of Ogden, Utah. Principal items are 102,000 cu. yds. excavation; 34,000 cu. yds. compacting embankments; 8,200 cu. yds. earth lining; 113 cu. yds. concrete; 46,145 lin. ft. optional pipe in pipe-line laterals, 4 to 24-inch diameter; and other work. Completion time 280 days. For particulars, address Bureau of Reclamation, P. O. Box 387, Ogden, Utah; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS

of

Engineering News-Record

for Opportunities to bid.

They might not see your announcements if printed elsewhere

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

The cost is only $2.40 a line per issue.

OFFICIAL PROPOSALS

Bids: May 12, 1960

Soil Explorations and Foundation Investigations Richmond County, N. Y.

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time on May 12, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON INTERSTATE ROUTE 512, CLOVE LAKES EXPRESSWAY, SLOSSON AVENUE TO RICHMOND ROAD, NEW PROJECT NO. 1-278-1(6)1, ITEM 28B, RICHMOND COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-156.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.

(b) Mr. Austin M. Sarr, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.

(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $26,815.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF PUBLIC WORKS

Prequalification: July 15, 1960

Hydroelectric Project Corporacion Autonoma Regional Del Cauca Cali, Colombia

Prequalification July 15, 1960
Prequalification Questionnaire
NOTICE TO CONTRACTORS

It is expected that during the second half of 1960 the Corporacion will request bids from a selected list of prequalified contractors for the construction of the Calima Hydroelectric Project, near Cali. The project will include a rockfill dam with a maximum height of about 100 meters and a volume of about 2,000,000 cubic meters; an 120,000 kw underground powerhouse with a vertical access shaft about 230 meters deep and an inclined access tunnel about 700 meters long; a morning glory spillway; a power intake and gate shaft; a power tunnel and inclined penstock shaft; a tailrace tunnel about 1630 meters long; a diversion tunnel 660 meters long; a tributary diversion tunnel 7 kilometers long; and appurtenant works.

Interested firms that have satisfactorily performed comparable work should apply promptly for prequalification forms to the Corporacion, Apartado Aereo 2366, Cali, Colombia. Completed prequalification forms will be required no later than July 15, 1960. Bids will be received from prequalified bidders only.

(Additional Proposal Advertisement on page 98)

READ THE OFFICIAL PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Highway Engineer with combined location survey and design experience for permanent position with consulting firm in Southern Connecticut. Position involves supervision of survey parties prior to assuming design duties. P-4216, Engineering News-Record.

Soils Engineer:—An expanding firm of Consulting Engineers requires the services of a fully qualified Soils Engineer to advise upon soils problems as they affect basic design and planning of all phases of the Company's work. Applicants should be at least 35 years of age and be eligible for registration as a Professional Engineer in the Province of British Columbia. In addition to comprehensive design experience they should have spent several years on the practical application of soils mechanics to earth dams and large constructional works. Ability to draft clear and concise specifications for earthworks is essential. The successful applicant would be expected to take full responsibility for the work assigned to him and must be capable of working with the minimum of supervision. The salary would be approximately $800.00 per month but is open for discussion. Reply, in confidence, giving full details of training and experience to P-4239, Eng. News-Record.

Highway and Bridge Engineers—Excellent opportunity for qualified Engineers—permanent openings. Send detailed resume with salary requirements to Rackoff Associates, 1033 W. Third Ave., Columbus 12, Ohio.

Chief, Construction Division. To direct and coordinate inspection of all construction activities for the Water Department of the City of Phila. We require college graduation with a civil engineering major and seven years of professional civil engineering experience including four years in the field of construction, three of which must have been in a highly responsible supervisory capacity. Equivalent combinations of experience and education will be considered. We also require registration as a professional engineer as issued by the Penna. State Registration Board for Professional Engineers, or other registration which qualifies the holder for Penna. registration through reciprocity agreement of the Penna. State Registration Board. Salary starts at $10,596 per year with regular increases and liberal fringe benefits. Please send resume, before May 4, 1960, to Miss Alma Goldman, Room 975, City Hall, Phila. 7, Penna.

Civil Engineer for staff consulting work. Must have broad background in highway construction, knowing control of soils, design and control of concrete and bituminous mixes, plus actual field construction supervision. Minimum age—35 years. Salary, $9,000 to $12,500. Only complete application will be reviewed. P-4257, Engineering News-Record.

Office Design Engineer and Sales Engineers. Established firm in Midwest desires engineer with structural training—prestressed concrete experience desirable—for design, design drafting and general office engineering. Also need sales engineers with experience in construction projects. Applicants for either position should furnish resume of experience, education and salary expected in initial reply. P-4255, Engineering News-Record.

Civil Engineer—Capable of assuming direction of municipal public works and engineering department. Must be registered, graduate engineer and a U.S. Citizen. Salary open; dependent upon qualifications and experience. If interested write giving qualifications and salary requirements. Write to: P-3872, Engineering News-Record.

Sanitary Engineer, experienced in engineering reports, design, specifications for water treatment and sewage disposal plants. Ability to do structural design desirable. Mechanical Engineers, experienced in design of air conditioning systems, service piping for institutional buildings or equipment layout and process piping for industrial plants. Permanent positions in Georgia. Send resume and references to P-4305, Engineering News-Record.

• POSITIONS VACANT

Civil Engineer with municipal experience. Able to register as a Civil Engineer in State of Ohio. Send complete resume of experience and qualifications to P-4320, Engineering News-Record.

Chief Sewer Engineer. Fort Wayne, Indiana. Population—approximately 155,000. Must be or immediately become registered in the State of Indiana as a Professional Engineer. Degree in Civil Engineering or equivalent experience, plus a record of progressively responsible supervisory experience in the design, construction and operation of sewer systems. Salary range: $8000 to $9500. Send complete resume to: Chief Engineer, City Utilities, 425 So. Calhoun Street, Fort Wayne, Indiana.

Structural Engineer—3 to 5 years experience in industrial buildings and material handling systems. Must be familiar with shop details. Central Structural Design, 4037 Monroe Street, Toledo, Ohio.

Structural Engineer. Structural design in Architect's office, involving schools, hospitals, commercial work. Located Kansas City. Permanent position, opportunity for advancement. Starting salary $10,000. Give age, education and experience. P-4321, Engineering News-Record.

Engineers—Professional engineers to fill positions as Senior Building Construction Engineer. Vacancies in New York City and in Albany. Involves supervision of large and complex building construction or reconstruction projects. Requires license as registered architect or Professional Engineer and two years experience in professional engineering or architectural field experience in the supervision of building construction projects. Salary $7818-$9408. For detailed information write to Recruitment Unit, New York State Department Civil Service, Box 33A, The State Campus, Albany 1, New York.

Sanitary Engineer—Salary open. Sewer and Sewage plant design exp., and water quality knowledge. Perm. pos. with consulting engineer. Pomeroy and Associates, 660 S. Fair Oaks Ave., Pasadena, Calif. (SYcamore 5-7553; MUrray 1-4655).

Quarry Foreman—Delaware and Maryland Area. Experience necessary. Response should include asking salary and availability for interview. P-4289, Engineering News-Record.

Draftsmen, Structural-Experienced checkers and detailers of structural steel shop drawings. Permanent position. Fink and Zwecker Co., 1100 Crescent Ave. N.E., Atlanta 9, Ga.

• EMPLOYMENT SERVICE

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 49 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

• POSITIONS WANTED

Project Manager—General Superintendent— Structural Engineer, not registered. Complete experience over thirty-five years in Estimating, General Superintendent, Job Superintendent, Project Manager and Contractor. Experience ranging on contracts up to Twenty-Five Million Dollars. Foreign or Domestic work acceptable. PW-4215, Engineering News-Record.

Professional Pilot commercial & instrument ratings. Spanish speaking production expeditor. Presently employed Latin-American project nearing completion. Over 10,000 hrs. Perfect safety record. Sober, personable, responsible and dependable family man. References and resume on request. PW-4230, Engineering News-Record.

Project Manager—Superintendent. B.S.C.E. (Structural Engineering) age 30. Eight years with Engineer-Construction Cos. engaged in million dollar industrial & military building. Desire responsible field or office position. Available in May. Contact F. J. Snell, 10312 Fiske Court, Rancho Cordova, Calif.

Continued on page 95

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

MAY 19TH ISSUE CLOSES MAY 9TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

San Francisco

Refinery-Chemical Division and Power-Industrial Division offers immediate employment opportunities for engineers capable of assuming responsibility on design of major industrial projects such as refineries, petrochemical plants, and steam or hydro power plants.

Relocation allowances cover moving costs plus transportation reimbursement for you and members of your family. If you have an interest in a San Francisco assignment, please send a resume of experience to George I. Copeland, Manager of Personnel. Personal interviews will be arranged for qualified condidates.

Bechtel

Corporation

220 Montgomery Street

SAN FRANCISCO

In New York City, a personal interview can be arranged by phoning Paul Keating, MUrray Hill 7-7100.

FOREIGN EMPLOYMENT

Key personnel required for MAINTENANCE AND OPERATING CONTRACTS in dependent and non-dependent areas.

Only persons highly qualified in the following phases need apply:

1. AIR FORCE base maintenance and operation experience in engineering, utilities, vehicles, accounting, supply and fire protection.

2. ARM POST maintenance and operation in areas of Post Engineering, R & U, motor vehicles and supply.

3. NAVY base maintenance an operation experience in areas of off-shore unloading facilities, steam generator plants, buildings and grounds and mechanical shops.

Information must include date of availability, status of passport, marital status and interest in accepting assignment without dependents.

P-4311, Engineering News Record, 520 N. Michigan Ave., Chicago 11, Ill.

WANTED

EXPERIENCED

SANITARY ENGINEER

Nationally known engineering firm offers excellent opportunity for well qualified engineer experienced in design, estimating and supervising sewage disposal plants, sewerage and water systems.

Opening in New England Office

All replies completely confidential

Send complete resume and salary expected to:

P-4158, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SAFETY DIRECTOR

Major construction company offers outstanding opportunity to man with experience in construction safety. Send resume to:

P-4335—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

SALES ENGINEERS

A major steel company has need for sales engineers to promote and sell fabricated products in Middle Atlantic States. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive salary with company car, expenses and bonus plan.

SW—2763 ENGINEERING NEWS-RECORD
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

NOTICE

CIVIL SERVICE EXAMINATION

EASTON, PA.

Notice is hereby given that applications are now being received by the Civil Service Board of the City of Easton, Pa., for the position of

ASSISTANT CITY ENGINEER

Applicants must be either a Registered Professional Engineer; or qualified to become a Registered Professional Engineer; must be a citizen of the United States of America for at least five (5) years. Applicants must be residents of the City of Easton or will, if selected for appointment, take up residence in the city without delay. Applicants must be of good moral character and habits and must successfully pass the physical examination required by the Board.

Written applications for this position must be submitted in triplicate setting forth the date and place of birth, together with all educational qualifications and experience, together with at least three letters of reference from either former employers or persons with whom the applicant has recently been associated. Applicants in their application should state the amount of annual salary desired.

All applications must be in the hands of the Secretary of said Civil Service Board at his office, Room 208, City Hall, Easton, Pa., on or before 4:00 P. M. (DAYLIGHT SAVING TIME), Thursday, May 12, 1960.

CIVIL SERVICE BOARD (Technical)
CHESTER E. ROGERS, Secretary

WANTED

Paper Mill Construction Superintendent

Immediate Employment With a Leading Paper Mill Constructor. *Send Resume and Salary Requirements to*

Personnel Section
JOHN W. ROUSE CONSTRUCTION CORP.
Box 236, Gouverneur, New York

SENIOR CIVIL ENGINEERS

Well known Southern California architect-engineering firm has immediate openings for Senior Civil Engineers who are experienced in Site Planning, Utilities Design, Facilities Layout, etc. State registration preferred.

Submit full particulars of education, experience, and earnings to: Box

P-4343—Engineering News-Record
68 Post St., San Francisco 4, Calif.

ENGINEER-DESIGNER

Minimum 10 years of experience in the design of hydro structures in U. S., some planning experience desirable. Send complete resume of experience and qualifications to the

HARZA ENGINEERING COMPANY
400 W. Madison St. Chicago 6, Ill.

"Put Yourself in the Other Fellow's Place"

TO EMPLOYERS

TO EMPLOYEES

Letters written offering Employment or applying for same are written with the hope of satisfying a current need. An answer, regardless of whether it is favorable or not, is usually expected.

MR. EMPLOYER, won't you remove the mystery about the status of an employee's application by acknowledging all applicants and not just the promising candidates.

MR. EMPLOYEE you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section.

We make this suggestion in a spirit of helpful cooperation between employers and employees.

This section will be the more useful to all as a result of this consideration.

Classified Advertising Division

McGRAW-HILL PUBLISHING CO., INC.

330 West 42nd St., New York 36, N. Y.

• POSITIONS WANTED

(Continued from page 93)

Building Construction Supt. or Ass't.—36, 12 years Gen. Contractor, bid to completion up to $100,000.00. Bonded. Fair Spanish. Prefer Latin America for a change. PW-4198, Engineering News-Record.

Sales Engineer: Structural, Rebar and allied products. Direct sales, estimating, engineering and product promotion with architects and engineers. Age 32, willing to relocate and travel. Desire position with aggressive company. PW-4208, Engineering News-Record.

Superintendent finishing million and quarter plant in Middle West for Chicago Contractor desires change. Middle Atlantic States preferred. PW-4226, Engineering News-Record.

Brick Foreman—Young aggressive Bricklayer & stonemason very cost conscious—1 year college—familiar with all types masonry work —travel no problem. U. S. or foreign. PW-4193, Engineering News-Record.

Construction Manager B.S.C.E. Exp. General Supt. Chf. Eng. Hvy. Const. Roads, Tunnels, Flood Control, Bldgs Will Relocate, Box 48, Clayton, Mo., E. Eiswirth.

Chief Engineer—Senior Engineer for Engineering Contractor—or Mining Company. Diversified experience in all phases of mine, mill and refinery plant design and construction. Non ferrous, non metallics and iron ore benefication. Proven competence to organize, direct and control large projects in this specialized area of work. Graduate and registered professional engineer. Age 53. PW-4194, Engineering News-Record.

Construction Engineer: Reg. P.E. Contractor's design and field engineering work in California desired. Age 38—12 years exp.—Cofferdams —Bridge conc. Frame Bldgs.—Estimating— Shoring — Underpinning—Formwork—falsework—10 years with present employer—Available in June. RE 68430—West Springfield, Mass.

Field supt. of heavy excavation and drainage, 25 years experience on big projects. PW-4273, Engineering News-Record.

Estimator-Superintendent thoroughly qualified to handle complete job bidding stage to completion. Public Works, Heavy Construction, Bridges, Commercial and Industrial Buildings. Best of references. Available immediately. Will relocate to suit job. PW-4265, Engineering News-Record.

Contractor's Engineer-Graduate C.E. licensed in N. Y. and N. J. Heavy Construction, Buildings, Missile Projects. Bid to completion experience. Project Manager and Estimating. Wide experience in the preparation and processing of construction claims and arbitration. Presently employed. Can be available in one month. PW-4229, Engineering News-Record.

Field-office Engr. layout, supervision, take off etc. municipal, bldg. and heavy const. Location open, single. Brown, 600 N. 71st Ave., West Hollywood, Fla.

Executive—15 yrs legal-construction experience, Administrator, Mgr., Atty., Govt. Contracts, Claims. PW-4223, Eng. News-Record.

P.E. & R.L.S. (Mich. Registration) 32, 11 yrs. exp., surveying, subdividing, sewer, water and pavement design. PW-4259, Engineering News-Record.

Supt. of blasting, heavy constr. specializing on rock, road work, shaft, tunnel, quarry, general foundation. PW-4278, Engineering News-Record.

Const. Supt., Field Eng'r., BSCE, MSCE, Age 28, desires position with gen'l contractor, N. Y. or Conn. PW-4336, Engineering News-Record.

Equipment Supt.; Master Mechanic; or similar classification. U.S., or O.S. Age 55. Univ. trained in accounting. Know the technical and economy of efficient equipment and tool operation, and, or maintenance. 15 of 40 years experience outside the U.S. Available on short notice. At present in South America. PW-4295, Engineering News-Record.

When Answering
BOX NUMBERS . . .

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

• POSITIONS WANTED

Electrical Supt. or Gen. Fore. Age 36—all types of elect. installations, excellent ref. Speak Spanish. PW-4338, Engineering News-Record.

Civil Engr., BSCE, Reg. PE, 37, Varied exp. including 8 years surveying in construction & land, 3 years evaluation & rates, prefer construction, Western U.S. only, PW-4345, Engineering News-Record.

Contract Administrator, Project Manager, M.C.E. Age 34, 12 yrs. varied engineering experience, government construction contracts, plant maintenance, highway and heavy construction. Duties included management, supervision, estimating, purchasing, cost control. PW-4297, Engineering News-Record.

Soils Engineer (Civil), M.S., Licensed, several years varied soils experience. PW-4319, Engineering News-Record.

Construction—Project Engineer. 30 years experience practicing engineer, contracting and consulting on watersupply, sanitation, tunnel, bridge and heavy construction projects, design through construction. Registered. High professional standing. Available July for supervision construction large scale project or construction program for owner, consultant or contractor. PW-4326, Engineering News-Record.

Field Engineer or Ass't Supt. B.S.C.E.—2 yrs construction supervision and surveying microwave systems; 2 yrs. heavy construction,—sewers, foundations grading, etc. Available now.—U.S. or overseas. PW-4314, Engineering News-Record.

Sales Engineer, age 29, 5 years experience as district representative with major heavy equipment manufacturer, college M.E. degree, seeks challenging sales position. PW-4346, Engineering News-Record.

• POSITIONS WANTED

Manager, Assistant or Branch with growing building construction company. Young & experience & would like to grow with company. Cost conscious person who can qualify in any position such as Manager, Estimator, Field Superintendent & Purchasing Agent. Also knows systems & Procedures of Construction Business. PW-4339, Engineering News-Record.

Civil Engineer, 34, Reg. PE 10 yrs. design experience in Highways & Expressways. Desires challenging position. Will relocate. PW-4337, Engineering News-Record.

Estimator, General Construction and Piping. Quantity take-off from bidding to completion. Age—35. Prefer mid or southwest. PW-4325, Engineering News-Record.

Superintendent or Manager 22 yr. Hot mix Asphaltic Concrete, all makes of Plants, Pavers, Wash plants Crusher, Quarries, Grading & Bases. PW-4327, Engineering News-Record.

Controller, B.S. in business, age 35—10 yrs. exp. light & heavy const. including Costs, Budgets, Gov. Claims. Bid Procedures, Office Mgr. PW-4302, Engineering News-Record.

Office Manager-Accountant — Experienced heavy construction. Field office or central office NCR machine accounting. Mid-west or West USA. Available. PW-4294, Engineering News-Record.

Secretary—15½ years construction experience. Know secretarial field and some accounting. Desire Southwest or West Coast. Available 30 days. PW-4322, Engineering News-Record.

P.E., Struct., Age 29, desires job as Ass't. Const. Supt. N.Y.C. PW-4329, Engineering News-Record.

SEARCHLIGHT SECTION
CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

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The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vest. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

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ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
Write today — about obligation
WILSON *Engineering Corp.*
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CONSTRUCTION SUPERVISION
Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.
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Est. 1952
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One-stop, 1,000 bbl. cement, 100 ton bin, 3-yd batcher, undertrack conveyors aggregate and cement, 1 year old, all accessories.
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NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

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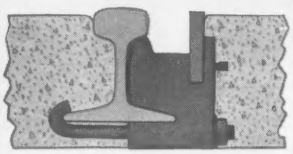

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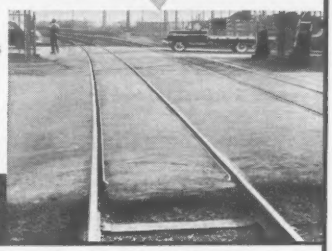

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OFFICIAL PROPOSALS

Bids: May 17, 1960

Port of Toledo
Port Authority Facility No. 1

ADVERTISEMENT FOR BIDS
TOLEDO-LUCAS COUNTY PORT AUTHORITY
TOLEDO, OHIO

NOTICE IS HEREBY GIVEN by the Board of Directors that Sealed Bids will be received by the Toledo-Lucas County Port Authority for:

STAGE II—CONTRACT 2
BULKHEAD CONSTRUCTION, DREDGING AND FILL
Port of Toledo—Port Authority Facility No. 1

The principal items of work are:

Estimated		Item
2,100	Linear Feet	Steel Sheet Pile Bulkhead
77,000	Cubic Yards	Dredging for Filling
18,000	Linear Feet	Steel H Piling

Bidders are advised that alternate limits of work, involving variations in the above listed quantities, are provided for in the Contract Documents.

Bids for the above described work will be received at the offices of the Toledo-Lucas County Port Authority, 241 Superior Street, Toledo 4, Ohio, until 2:00 P.M. (EST) Tuesday, May 17, 1960 and will be publicly opened and read aloud immediately thereafter at the offices of the Authority.

Each Bidder will be required to submit as a part of his proposal a statement concerning his financial condition, present and proposed plant and equipment, the personnel and qualifications of his working organization, prior experience and performance record.

Plans, Specifications, Proposal and forms of Proposal Bond, Contract and Contract Bond are on file at the offices of the Toledo-Lucas County Port Authority, 241 Superior Street, Toledo 4, Ohio, and the offices of the Engineers-Parsons, Brinckerhoff, Quade & Douglas, 165 Broadway, New York 6, New York, where they may be inspected by prospective Bidders during office hours.

Plans and Specifications (including Proposal Form, Proposal Bond Form, Contract and Contract Bond Forms) may be obtained by prospective Bidders at the offices of the Port Authority for $50.00 per set, twenty-five dollars of which will be refunded upon the return of a complete set of Plans and Specifications provided they are in good condition.

Proposals must be submitted on the form furnished by the Authority; must contain the name of every person interested therein and shall be accompanied by a Proposal Bond, with satisfactory surety, in an amount of not less than two and a half percent (2½%) of the total amount bid, specifying the Toledo-Lucas County Port Authority as the obligee, and a certified check on a solvent bank or a cashier's check, in the amount of not less than two and a half percent (2½%) of the total amount bid, subject to the conditions stated in the Specifications.

The successful Bidder will be required to furnish a satisfactory Performance Bond.

Any bid may be withdrawn prior to the scheduled closing time for receipt of bids.

The Authority reserves the right to reject any or all bids and to waive any technicalities as it may deem best for the interest of the Authority.

NOTE: Plans and Specifications will not be mailed prior to the receipt of payment of cost shown in this Advertisement.

Toledo-Lucas County Port Authority
W. W. Knight, Jr.—Chairman
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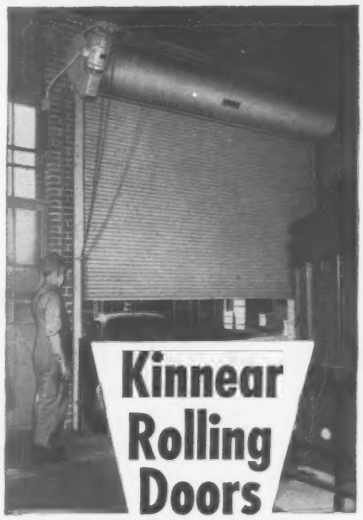

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Construction and Cosmology

CIVIL ENGINEERS have an indispensable part to play in solving the riddle of the universe through their design and construction of radio telescopes (see p. 28 and ENR Oct. 15, 1959, p. 40).

The Greek philosophers who speculated about the nature of the universe some 2,500 years ago would have scorned the notion that practical-minded engineers and builders could contribute anything toward answering such "ultimate" questions. Yet today, the answer to the question whether the universe had a beginning or whether it just serenely rolls on from an infinite past into an infinite future depends very largely on the precision that can be built into radio telescopes.

There are two cosmological theories generally compatible with astronomical observation at its present limits: the Big Bang Theory and the Steady State Theory. According to the Big Bang Theory, a primordial explosion of a super-dense cluster of matter started the universe expanding. In contrast, the Steady State Theory assumes a uniform, continuing expansion, without recourse to any hypothesis about the origin.

The most startling consequence of the Steady State Theory is the spontaneous creation of matter. Continuous creation of hydrogen atoms provides new material for the formation of stars and galaxies, which form and recede at a rate balanced to keep the average density of matter throughout the universe at a constant value. The Big Bang Theory, on the other hand, requires no radical addition to physical law. It considers the formation of galaxies a finished process. This implies, of course, a continuous reduction of the average density of matter distributed throughout space.

At present, the Steady State Theory holds the upper hand, largely because it successfully explains how the heavy elements are produced. Thermonuclear reactions produce iron, silicon, and other heavy elements inside the supernovae as they build up to their spectacular explosions. Scattered through space by the explosions, the gas containing these heavy elements may later condense into stars like the Sun and planets like the Earth.

Moreover, the Steady State Theory is scientifically superior to the Big Bang Theory. Only the consequences of the Big Bang Theory can be observed. But in the Steady State Theory all the processes at work in the universe are, theoretically at least, open to observation.

The new radio telescopes will peer up to 20 times farther into space than the most powerful optical telescope. The Navy's 600-ft-diameter reflector, under construction at Sugar Grove, W. Va., will gather radio signals emanating from galaxies 38 billion light years away. With instruments like this, astronomers should soon be able to determine the age of distant galaxies through more precise measurement of their light and radio waves. Discovery of wide age distribution among the galaxies, or of galaxies definitely older than the time past since the primordial explosion, would probably blow up the Big Bang Theory. On the other hand, solid evidence that the average distributed density of matter is changing, or that it varies from the average in any large region of the universe, would kill the Steady State Theory.

Whatever the outcome, construction's engineers will contribute much of the astronomers' success.

Small Bites for Big Problems

THE URBANIZATION OF AMERICA, highlighted by the fact that two-thirds of our people now and 80% by 1970 will be city dwellers, is creating problems whose magnitude can be frightening unless viewed in sensible perspective. Unfortunately, there is a tendency to think we have to gulp the big problems whole instead of taking small bites that are within our capabilities to digest.

One reason why the "big picture" problems sometimes tend to obscure possible and practicable piecemeal solutions can be found in developments in Washington, where big problems are of natural concern. Thus, the bill introduced in this session of Congress to create a "Department of Urbiculture" was based on the idea that city problems are so big that they can only be solved by federal guidance and help. Likewise, the huge conferences held periodically in Washington, such as those on housing or schools, or the one announced last week on water pollution, tend to emphasize the difficulties of the big problem. The conferences are worthwhile, but too many people go home discouraged at the magnitude of the problems and convinced that they can only be solved by the federal government.

It seems likely that this tendency to put problems in a framework of ultimate and complete solution is a prime cause for city officials, whenever they get together, to pass resolutions asking for more federal aid for every conceivable purpose—public housing and urban renewal; mass transit; civil defense; hospitals; schools; airports; air and water pollution, to mention a few.

Each of these areas of need is, of course, immense, but too much emphasis on the billions of dollars required to solve the whole problem distracts attention from the fact that each city's part is relatively small and that complete solution is not required immediately.

Prof. Abel Wolman of Johns Hopkins University pointed out recently that it has cost us $30 billion since the 1890s to develop our water supplies to their present state of efficiency. And he noted that if the people of that day had worried about such an expenditure, they would never have discarded their backyard wells. Fortunately, they didn't bother about the big problem, but went ahead with their own small bites of the whole. There is a lesson in this for today.